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March 1986

Atari ST User



- *Under test: the first spreadsheet for the ST*
- *How Colourspace on the ST can blow your mind*
- *Atari make musical history with Midi breakthrough*



WELCOME to the first issue of *Atari ST User*, a magazine dedicated to the most talked-about computer of the year.

When Atari boss Jack Tramiel launched the ST in November just 11 months ago, his choice trembled. At one stroke he had transformed the image of Atari from that of an ageing games-orientated company to one that had to be taken very seriously indeed.

So much so that his 88

bit machines are currently poised to dominate the business market and at the same time provide do-it-yourself programmers with the most challenging and versatile computer they have ever had their hands on.

Today some 1,800 companies around the world are producing products for the ST — that's the sort of excitement it has generated.

It is to better reflect the

growing importance of the entire ST range that *Atari ST User* has been launched.

In the months to come this magazine will play a leading — and vital — role in showcasing the tremendous and far-reaching developments now being planned. If it concerns the ST you can be sure you'll be able to read all about it in *Atari ST User*.

So jump aboard, it's going to be an exciting, stimulating ride.

The megabyte ST is coming!

MIKE COWLEY reporting

ATARI has announced the Big One in the United States — their first personal computer with one megabyte of memory. To be known as the 1040ST, the machine will cost \$999.95 with a high resolution monochrome monitor or \$1,199.95 with colour.

Although it will soon be shipped to the UK — just how soon nobody will say — the British price tags are still to be worked out. 'Don't just do a direct conversion to work out how much it may cost here,' warned an Atari spokesman.

The 1040ST is a business system featuring professional integrated design with CPU, keyboard and disc drive all built in. It is to be offered complete with ST Basic, 1st Word (the word processing program currently bundled with the 520ST), NeoDemon Paint and VT82, a terminal emulator for telecommunications.

Because all current titles developed for the 520ST run on the one megabyte there will be no shortage of software to coincide with its arrival. Atari-side at least, the 1040ST is to be offered exclusively for distribution by computer dealers.

In a related announcement, Atari in the US has revealed it is to provide a 2D megabyte, 8½ inch hard disc peripheral. The \$400-500 seems to be the add-on to deliver the increased power requirements for most professional applications.

The 1040 is being viewed by the boys from Atari as the machine to 'break the mould' which for so long has linked the company to the games market. 'Now they'll realise that we are serious about the business market', says Atari vice

president Al Montross.

Features of the new machine include its built-in double sided, double density 3½ inch disc drive and power supply. The operating system — the somewhat unfortunately named TOS — is in ROM, leaving the full RAM available for user applications. It offers an elegant professional 95 key keyboard with a separate turbo 10 function keys and an 18 key numeric keypad.

The 1040ST also boasts a built-in hard disc (DMA) port, a floppy disc interface for external 3½ inch drive, a built-in RS 232 serial port for use with standard modems and an industry standard parallel port for connection to popular brand printers.

The 1040ST offers the choice of a high resolution monochrome monitor (840 by 480 pixels) or a medium resolution colour monitor (840 by 380 pixels) with a palette of 5-12 colours available.

'When the Atari users in the UK hope to get their first glimpse of the one megabyte monster? Everyone is playing it very close to their chests for the time being. But here are some possible clues,' writes:

- What major computer event is to be held in the November/ London from March 7 to 9?
- Where will Jack Tramiel be on those dates?
- Who has promised to spring a few surprises during the show?

Got it? Remember you read it first in the *Atari ST User*.

Meanwhile, the names have also been confirmed

over in the States that the 520ST is so be undoubted. And that means that the tanks at least will be able to buy a basic 520ST with built-in FM modulator for under \$450.

This one is apparently to be called the 520 STM (M for modulator). But it will also have a slightly more expensive older brother — the 520ST FM — with a built-in floppy disc drive.

Now the FM version is reported to be the replacement for the long-unavailable 520ST. But at least one reliable source has actually seen a 520ST case in the Atari U.S. headquarters in Slough.

When the cut-price 520ST M (not the FM) — are you paying attention at the back? — arrives in the UK — and there is as yet no indication as to when this might happen — it is likely to be welcomed by UK manufacturers like a lost case of hamorrhoids. For at that price there will be nothing on the market to compete with it for power and performance.

However just a few recent purchasers of the bundled version might feel a little miffed that they

weren't even given the chance to choose. But that's the computer market for you.

Software houses worldwide are still performing like whirling dervishes to grab a slice of booming ST market. Atari president Sam Tramiel has just announced there will be a minimum of 100 new packages for the 520ST during the first quarter of 1986. In all that should make about 200 significant titles available for the machine — and subsequently the new 1040ST.

Programming for the ST is the fastest-growing segment of the computer market*, insists Sam Tramiel. Over 1,500 companies worldwide are doing serious work on the machine.

Not that this is too surprising when you recall that Jack Tramiel insisted that they bought the development systems in the first place. They don't come any cheaper than Atari's chairman. You ask the people at Commodore all about that. They haven't been having it any so good since he took his leave of them.

A typical screen layout from Laser Software's new database for the ST.



Artistic mouse

FIRST of a new range of programs promised by Autodesk: *Design & Entertainment Graphic Art System* — has been designed for the Atari ST.

It is said to provide a comprehensive range of artistic elements under the control of the computer's mouse, including 16 tools for freehand drawing or painting in a variety of widths, special functions permitting creation of geometrically perfect shapes and an air brush that colours an area like a spray can.

A merge function makes it possible to create commercial shapes or reflect an image drawn in one screen location into many other locations. Patterns drawn with the pen or brush can be filled with up to 35 pre-designed patterns, plus others which can be loaded from the program disc.

Design runs under either disc or ROM-based Atari TOS operating system and can integrate pictures and text using existing type fonts

already on the program disc, or user-designed fonts. It costs £39.95.

Flexible database

DESIGNED to work within the GEM environment of the Atari ST, *LaserBase/ST* is a new database from Laser Software International. Users can design their database in any way they wish, with little limitation to field or record length. Once all the information has been entered it is still possible to rearrange the original format.

Information on the database can be presented in different ways and there are three reporting options — columns, list and mailing labels. Mathematical functions included provide facilities for totals, averages, translation or item counts, and minimum and maximum values.

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A NUMBER of word processors have been released for the EGOT and a couple of databases, but so far there have been no spreadsheet packages. Kuma Computers is the first company to fill this gap, with its new K-Spread software.

A number of other packages are planned, including word processor, database, forms and graphics packages which will integrate with K-Spread, eventually making it the heart of a versatile suite of programs.

Let's concentrate now on K-Spread. The program is provided on an unprotected disc and the first thing you should do is make a back-up of it. Although copy protection is necessary for games products, I feel that Kuma has got the right idea as far as business software goes.

No one wants to spend £50 on something they will need to rely on, only to find that they suddenly can't use their purchase because their soft copies over the only disc. The other disadvantage of protection is that you can't easily transfer a copy-protected product on to hard disc something which many users will soon want to do.

Once you have made your back-up you simply boot up your system and double-click on the SPREAD folder. You will then see the directory of all the files Kuma provides—the main program, some update notes and various printer-driver files to allow you to customise K-Spread to your own requirements. The default printer type is Epson, that is the normal system printer. Double-click on the program file and K-Spread will load.

The main display which will run in monoochrome or medium res but will be composed of the spreadsheet itself with a number of icons down the left hand side. You can use these to do many repetitive functions.

Dragging the disc onto the spreadsheet menu loads from disc, and vice-versa to save your sheet. I tried to double-click the disc drive symbol and it told me 'The only way to open this device is with a softdriver'. The printer has its own icon and there is even a clipboard for temporary storage. The sheet itself is a window on to a possible 256 by 8192 cells or boxes which is large enough for most people (but with TOS loaded from disc rather than in ROM, you still have 100k for your sheets or 120k if you remove the desktop accessories, which should allow reasonably large sheets).

Movement about the sheet is arbitrary itself, with all of the normal Gerni functions at your disposal. This means that you may move up, down, left or right by clicking on the arrows and scroll bars (beside the sheet). You may also move the window and change its size in any way you wish. If you want to move quickly to a given cell, the options pull-down menu has a GOTO command which defaults to the home position.

Also included in the options menu is a Text Search operation which will find a given piece of text within your sheet. A View option which will

K-Spread, easy on the pocket and your mind

change the size of the characters on the sheet (useful if you're working with a colour monitor) and something called Split. This allows you to open up to two Gerni windows simultaneously each of which you may move, size and scroll independently. The option menu also controls Status setting such as number of decimal places, commas, any leading sign such as £ or \$, and the manual/automatic recalculation settings.

Another of the pop-down menus provides you with File operations. These include Load and Save. Save As, which saves a file under a new name, and Give and Take. These last two allow you to save portions of all of the sheet in a form unloaded by the other packages in the suite. Thus you could, for example, transfer data to the word processor or graphics programs.

The main Save routine seemed to contain two bugs. Firstly pressing Return after entering a filename sometimes cancelled the save, rather than executing it, even though the default mouse button was the OK function. For a beginner, and especially for someone with a high speed hard disc, this could prove disastrous if they thought that the save had been completed. The second bug came after successful completion of a save when the system insisted on telling me 'You cannot drag a cell on to the desktop...which was very interesting, but not terribly relevant'.

All this is fine, but at some point you are going to want to actually enter some data on to your sheet. At this point I feel K-Spread lets itself down badly in order to get the Data Entry window to appear you must double-click on the relevant cell. There is NO automatic keyboard entry mode as seen on such programs as VisiCalc, in which as soon as you start to type the computer decides whether you are typing a number or some text and acts accordingly.

Once you have double-clicked on the cell, you must select with the TAB key whether you want numbers, formulae or text mode. Also pressing Return after you've finished is not enough to enter the info and return you to the sheet again. For that you must click on the mouse once more.

Put together, this means that you must move and select with the mouse, then type on the keyboard, then use the mouse again to finish. If you are entering a lot of scattered data, this could be extremely tedious, and it is a serious omission in a package of this nature that there is no

ANDRÉ WILLEY
reviews a
Kuma
Computer
spread-
sheet
which will
form the
heart of a
versatile
suite of
programs

keyboard-only equivalent to the mouse operations.

The only saving grace in this area is that, once in the Data Entry window, you may complete your entry and move with a Shift-Arrow combination, which will enter the data and move in the direction of the arrow. This removes some of the tedium, but you still need to use the mouse in order to close the window completely.

I found that a great many other normal features found even in 8-bit packages such as 'what-if' were missing. There were very few defined functions for example. You are provided with MAX, MIN, MEAN (average) and SUM, but no look-up features, scientific operations or financial calculations such as interest rates. You also have no way of flagging title lines which remain in place even if you scroll the data underneath, or repeating labels which are useful for underlining and so on.

That said, if you type a label longer than the current cell width it will overflow for as many cells as it can until it finds one which already has data in. If there is not enough space to the right, a small arrow will indicate that there is more text than can be displayed. Strangely there is no mention at all of this feature in the somewhat flimsy 17 page booklet that accompanies the program. Nor does it inform you that text fields will be highlighted, in green on a colour monitor which come as quite a surprise.

However such things as moving and copying data are so much easier than on other systems. You simply select a cell, row, column or block with the mouse, and drag it to its new location. You may even drag it on to the clipboard for later use, which is very useful since you can't overlap your source and destination areas, which can prove rather annoying at times.

Formulas may be amended to allow for the new relative positions of cells, but unfortunately you can either change all of them or none at all — there is no option for leaving some absolute references untouched. Also the program requires you to select relative or absolute mode regardless of whether or not there are any formulae involved in the copy.

The replicate function of many spreadsheets is provided in a limited form by the ability to copy a single cell on to a row or column. Most packages of this nature would allow you to scan over the sheet to select your start and end points, but K-Spread requires you to remember the cell reference numbers in order to do this, which is no mean feat (remember 286 x 8192 H). You must again remember not to copy over the original cell, which is often a little difficult, as the default settings will try to do just this.

One very nice touch here is a bar chart which indicates how long a given task will take to complete — much better than just staring at a dead screen. Similarly copying, printing, inserting or deleting rows or columns are all extremely easy — all you need to do is double click on the row/column header and a pop-up menu. Click on

the other side of the column header and you can change the column width of either a single column or a group of columns.

You may also alter the way a given area of the sheet is displayed. By choosing a cell, row, column or block, and then clicking on it, you can select integer or decimal mode, left/right/centre justification, leading sign and protection (whether the system will allow you to change values within that area). The problem with this is that you may only set local values for cells with data in. If the area is currently blank you cannot change its attributes. This can be very annoying if you want to set up a column for entering money and another for percentages for example. The only way to do it would be to enter the figures first and then set the format.

If you are trying to create a sheet for someone else to use, such as in a business, that could be extremely annoying. When you come to print out your sheet you may either use the printer there, or drag the sheet on to a block or the clipboard, onto the printer icon. You may also choose when to print the finished sheet or just the formulae it uses, or portions of either.

Options are included to allow page breaks, row/column number inclusion, sending of form feed and other control characters, and also which characters, if any, are used between cells and columns. Breaks are included for a number of printers, or you can set up your own to allow for different sizes of paper, print styles, and translation of certain special characters into others more suited to your printer.

The overall impression one gets of K-Spread is that it has been designed to be very easy to use for the beginner, and in that it certainly succeeds, as it is quite the easiest spreadsheet I have ever had the pleasure to use. However in doing so I feel the author has had to sacrifice too much, with a whole set of useful operations missing. Also the ease of use of a mouse sits well against you if you don't provide a good keyboard alternative, as demonstrated by the awkwardness of actually entering data onto the sheet.

In its favour though, are two major facts. If it is available, and as of now it is, you want a spreadsheet, this is the only one available. Also the price is only £49.95. For such a product this is very cheap and compares very well with the suggested price of more advanced products such as VIP Professional. Although VIP will probably win hands down on features, it will also cost almost £300.

So if all you want is a relatively straightforward easy to use spreadsheet which has all the bells and whistles of Gsm and doesn't cost the earth, look no further than K-Spread II. However, you feel that you will need more complex scientific calculations, macros, graphics and everything else a Lotus 1-2-3 clone can offer, perhaps you would be better off waiting for the first release of VIP Professional. That's always assuming you're not in any great hurry, of course!



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One stuffed Yak and a 520 ST is a mixture to blow your mind

WITH his shoulder length hair, faded blue jeans, crumpled kaftan and dangling ear-ring Jeff Minter's appearance is sufficient to give a retired colonel apoplexy. The fact that he likes to sleep "crashed out" on a stuffed Yak also does little to suggest he's not a throwback to the Flower Power days of the Sixties.

Not that the 33-year-old programmer needs the reveal in being described as the last of the hippies in his home town of Tisbury, Wiltshire. Such is his fascination with that era that he is still carrying the psychedelic torch. Only Jeff doesn't turn on weed drugs but relies instead on the ST.

As the driving force behind Llamasoft, he has created Colourspace, the "ultimate mind blowing experience" on the machine. What it really is is a brilliant software toy, a kaleidoscope of controllable shapes and colours which demonstrate the graphics wonders of the ST to the full.

In its original 8 bit version it captured the imagination of no less a person than Leonard Nimoy, son of the Alien chairman and himself an executioner of the computer. Colourspace for the 520ST took Jeff Minter some five months to write "getting up at the crack of noon most days and working until the early hours of the morning".

What is the difference between the two versions? "It's like stepping out of a mind into a Ferrari," says Jeff. "The thing is that the ST is just cooler" (he even talks hippie).

"With the 8 bit you have just 60 pixels across and 62 down. But with the ST you have 320 across and 256 down to play with. That's why I've been able to make Colourspace the first video narcotic. And that's crucial" (roughly translated that means nothing less than perfection).

Jeff Minter is so sold on the 520ST that he is convinced that it will not only run away with the business market but also capture the top end of the enthusiasts sector as well. "It can't be



Jeff Minter:
He found
inspiration for
Colourspace
on the back
of his yak

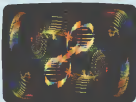
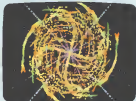
beaten", he says.

To get the maximum effect out of Colourspace the author suggests that it is served up with a liberal helping of loud music. "With Pink Floyd it is nothing short of awe!" he says. (It seems that the hippie type vocabulary has its limitations.) "But it really should be left to people's individual tastes as long as it comes over good and strong".

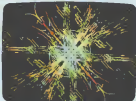
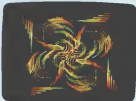
An extension has been built on to the Minter home to act as Jeff's computer room. For Llamasoft is very much a family affair. Having had his fingers burned commercially a couple of times, he turned to the one person he could trust to handle his business affairs - his mother.

With mum looking after the books, Jeff retreats to the computer room where he is surrounded by his collection of stuffed animals. These apparently help with the vibrations necessary for his work. After all animals have always influenced his life: "I went into camels in a big way

E... bringing out all the graphic wonders of the ST



Examples of the limitless graphics effects that can be achieved using Jeff Minter's Colourspace program on the ST



ATARI 260/520 ST

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From Pythagoras to Midi music

WHAT is the connection between Pythagoras, Jimmy Hendrix and two sockets on the back of the Atari 820ST? They all represent great breakthroughs in electronic music. Confused? Then read on.

Pythagoras, the Greek mathematician, was strolling past a blacksmith's shop and noticed that the hammers seemed to be playing a tune as they beat on the anvils. Fascinated, he investigated, weighed the hammers and discovered that the note they emitted was proportional to their weight. A hammer twice as heavy as another produced a sound half the frequency.

Pythagoras had discovered the connection between mathematics and music. Musicians in the 1930s used his principle to produce the first electronic music. When an object vibrates, the air around expands and contracts, producing a wave form which is often audible.

An electrical current flowing through a small strip of metal via a modulator causes the metal to vibrate and produces a simple sine wave. A sine wave looks like a cross-section of a corrugated iron sheet and the voltage applied to the metal strip determines the frequency.

The experimental musicians of the '30s used this principle to produce a steady tone with a variable pitch. This was called a sine tone generator and was the first electronic synthesiser. The sound you hear if you forget to switch off your television late at night is made by a sine tone generator.

In the 1950s modern classical composers like Stockhausen and John Cage composed music generated electronically, rather than performed by musicians. In the 1960s rock musicians began to experiment with electronic music. Feedback and wah wah pedals featured in the music of groups like Jimmy Hendrix and The Who.

In the 1970s transistors replaced valves and made both computers and musical equipment cheaper and more compact. Groups appeared on stage with portable analogue synthesisers. A note played on the keyboard of an analogue synthesiser is generated electronically and then filtered and modified by a number of switches which split and mix sounds, determine the "shape" of a note by assigning a predetermined wave form, and designing the envelope of a sound.

The envelope has four characteristics - attack, decay, sustain and release (ADSR) - often represented graphically. A synthesised drum sound has sharp attack, swift decay, low sustain

and swift release. A synthesised violin has slow attack, higher sustain, slow decay and slow release.

Differences between sounds with similarly shaped envelopes, such as a saxophone and piano, are defined by the shape of a note's wave. Analogue synthesisers can also mix and split signals and filter sound. Their use in music was popularised by musicians like Klaus Schulze of Tangerine Dream and Brian Eno of Roxy Music.

The next breakthrough in electronic music technology was the digital synthesiser. The low cost and wide availability of silicon chips in the late 1970s which caused the micro boom, inspired a revolutionary method of recording, generating and processing music. It was no longer necessary to generate sounds by passing variable electrical voltages through small pieces of metal. Music could be stored and created in a computer program.

Music played by an instrument connected to a digital receiver such as a computer would be recorded in digital form in the memory. The process also works the other way allowing notes to be defined digitally, amplified and played through a music system. It was no longer necessary to twiddle buttons and slide knobs to generate a sound.



Analogue synthesisers worked on a principle developed by Robert Moog

Digital synthesisers also allowed the wave shape of a particular note to be defined. The old analogue synthesisers were limited to a few pre-defined wave shapes. They worked on a principle developed by Robert Moog, called subtractive synthesis. A rich wave pattern such as a square wave was generated and the unwanted elements of the sound were filtered out. Digital synthesisers work on a different principle. They build up a rich sound by combining simple wave patterns.

Records and tapes could be recorded directly from a master program, containing the music in digital form, rather than from a second or third generation audio tape. This had the effect of removing a producer or performer's reliance on a

Anthony Ginn looks at the historical background that paved the way for the marvellous music you can play using the 520ST



studio performance.

The ability to define and edit a note's wave shape also enabled sounds not available on conventional instruments or analog tape synthesizers to be produced digitally.

Another feature of the new technology was its ability to sample sound. Any sound can now be recorded through a microphone, passed through an analogue-to-digital converter, stored in the computer's memory and regenerated at any pitch. You can connect a microphone and keyboard to a digital recorder, burp, clap or break a glass into the microphone, and then play a tune with notes of the sampled sound, on the keyboard. This is made possible with software which first analyzes the envelope, waveform and other features of the recording and then converts it to the notes represented by the keys on the keyboard.



It was always difficult to connect instruments to different computers

Digital technology enables you to burp Beethoven symphonies in the privacy of your own home, should you so desire. Live music recorded this way can be reproduced, as if played live, and controlled from a second desk: altering time, volume and so on. Unwanted sounds can be removed and new sounds added.

It was always difficult to connect instruments to different recorders and computers. There were problems when recording several instruments simultaneously. They slowly slipped out of time with each other. The need to adopt a standard method of communication became obvious. Instruments and equipment spoke different languages and translation was required. A standard digital interface was needed.

The largest Japanese and American manufacturers of digital equipment got together and, in 1983, announced Midi: the Musical Instrument Digital Interface. Computers and musical instruments from different manufacturers would at last talk the same language. A variety of instruments and recording equipment could be controlled from one computer.

A factor which influenced the final design of Midi was cost. Home computer owners and musicians should be able to afford it. The manufacturers looked at both serial and parallel methods of transmitting data. Serial transmission was cheaper than parallel so it was decided to send data in series. This has led to one of the main criticisms of Midi: that the transmission system is too slow when controlling several musical instruments simultaneously.

Information inside a computer is stored in bytes. Each byte, in an 8-bit computer, contains eight bits. In parallel transmission the bits are

sent down separate wires, simultaneously. Serial transmission sends all eight bits down the same wire, one after another. Only two wires are required: one to send and one to receive. The system has a method of checking that the correct signal has been sent by receiving parity error messages through the second cable.

Midi has a special chip, the Motorola 68850 AICA - or Asynchronous Communications Interface Adapter chip. Its job is to package the eight bits of data before they are transmitted. It does this by adding two extra bits of data to each byte of information, making a 10-bit byte. Midi transmits at about 3,000 serial words per second. Information is stored in a bit as either a 1 or a 0. A 0 is placed at the front of the byte and a 1 at the end. This 10-bit word is then transmitted either to the computer from the instrument, or to the instrument from the computer.

If the computer is talking to more than one instrument, each instrument will have an address. All instruments will receive all the instructions, but will only accept messages sent to their individual addresses. Otherwise a drum might try to play a guitar solo.

The address is transmitted in the eight bits of data. To transmit, receive and convert data both the computer and the musical instruments must contain an AICA chip. These chips are expensive and to prevent them being destroyed by a surge of power (during a heavy metal number perhaps?) they are opto-isolated. Two unconnected electrical circuits exchange signals using photoelectric cells and act like a valve to protect the chip.

Using a powerful home computer as a digital recorder, with its ability to talk to low cost musical instruments, brings the means to create high quality synthesized music within reach of the public. Aten was the first manufacturer to recognize the potential, and equipped its new ST range of computers with Midi.

A computer has the potential of shaping and editing music



If you look at the back of the 520 you'll see two plugs, marked Midi In and Midi Out. Without Pythagoras they wouldn't be there. The 520ST is a first home computer to have Midi as standard. It is possible to plug any Midi interfaced instrument directly into the micro. Signals to an instrument or tape recorder are sent through Midi Out and signals from an instrument are received through Midi In.

The exciting thing about involving a computer in the operation is that its processing power has the potential of shaping and editing music. In the



It is possible to compose music directly on the screen without mastering the skills of playing an instrument

same way that a word processor manipulates words. Once the music is in digital form inside the computer's memory it is at the mercy of the software. As far as the computer is concerned it is just another load of 1s and 0s striding busily through the memory. A software designer writing for a Mac system can use graphics to display music on the screen.

Music notation has been more or less standard in the West for the last 400 years. Music is written down on five line staves and divided into bars. The number of notes in a bar depends on the length of the note and the time signature. Common time is 4/4, or four beats in a bar. A whole note is 2/4. Many short notes can fit into one bar and a long note may stretch over several bars.

It is not the purpose of this article to go into the theory of music notation. If you don't understand it, sit down with an instrument and a beginner's music tutorial, and you'll grasp the basics within half an hour. It is not difficult. The hard part is learning to play the instrument. Most music software displays music graphically in the traditional method, using the standardised notation.

Some software will tidy your music up. If you put too many notes in a bar the extra notes will be moved into the next bar. There are various ways of displaying and manipulating the music. Some programs allow you to plug in an instrument and play a note, which is then displayed on the screen, on a five line staff. This is relatively easy to do. The task becomes more difficult if the notes are to be recorded in real time. Besides having a pitch, a note has a length and different length notes have different envelopes and different timbres.

If a computer is to record the duration of sound it must have a way of timing each note. If you hit one key on a piano keyboard or one string on a guitar, you play a note. If you hit several keys simultaneously you play a chord. Some synthesizers only allow you to play one note at a time. These are called monophonic synthesizers. More sophisticated machines can cope with more channels. These are polyphonic synthesizers and can play chords and multiple

melodies. Connecting a mixer to a monophonic synthesiser will not turn it into a polyphonic synthesiser.

The way a note is played also affects its quality. Sometimes a pianist bangs his finger down, hard, sometimes gently, creating two sounds from the same key. Some synthesizers have this facility.

It is now possible to compose music directly on the screen without mastering the skills of playing an instrument. This is one of the great advantages of electronic sound. It is no longer



Thanks to Pythagoras, Jimmy Hendrix and the Atari 520 ST

necessary to play an instrument to make music. You can put notes on to staves with a mouse, cut-and-paste to even a light pen, define the timing, and get the computer to play the music.

As well as the pitch and duration of a note, the computer can also define the tone. A quarter at middle C looks the same on a sheet of music whether it is played by a violin or harmonica. The tone is determined by the factors we discussed earlier: envelope shape, wave shape and so on.

A good program allows easy definition and editing of these features. Newly defined voices and instruments are then assigned melodies. The resulting composition can be edited on screen. The computer sends the music to a digital to analogue converter which converts it to an analogue voltage. This is the type given out by a record or tape deck and can be played through an amplifier and speakers in the same way as an audio cassette.

Pythagoras, Jimmy Hendrix and the 520ST have made it possible to fill your home with your own electronic music. In a later article we will look at the software that is on the way to help you do this with your ST. My thanks to Andy Budge for help with this article.





Making the most of your ST

WHEN any machine is launched, it's inevitable that new users will have lots of questions they want answering.

That's what this section of Atari ST Users is for. So whenever your queries on Atari ST hardware and software, this is the place to get them answered.

Until your questions start flowing in, I'll spend some of this and next month's columns discussing a couple of commands in Basic that allow you to access the very heart of the Gem operating system.

On pages C-57 and C-156 of the ST's Basic manual you may have noticed two strange-looking commands called GEMSYS and VDISYS. These are explained rather sparsely at only one page each, but they require far more discussion. Using them you can gain access to some of Gem's inner routines that are not normally available from Basic.

The GEMSYS command gives access to the hell of Gem called the application environment services, or AES, and the VDISYS allows you to use the other half of Gem called the virtual device interface, or VDI. The AES deals with windows, alert boxes, menu bars and the mouse. AES routines are used in the control of objects on the screen. The VDI contains all the routines to do such things as drawlines, fillareas and write text. It takes care of everything that is placed on the screen.

This month I'll be looking at the VDI routines and the VDISYS command. Next month I'll be discussing the GEMSYS command and AES.

The VDISYS command is followed by one number in brackets. This is known as a dummy parameter because its value has no effect.

VALUE	1	2	4
NAME	BOLD	GREY	ITALIC

Figure 2

Values are passed to the VDI via three variables - CONTROL, PTSPIN and INTIN.

To pass values to the VDI, you simply poke these values into the correct variables - for example POK% CONTROL 5 - and then call the VDI with VDISYS(1). Searching through the VDI manual, which is only supplied to software houses, I have found four VDI routines that do not have an equivalent Basic command and therefore can be used to great effect in your programs.

The values that must be poked into the variables are given in Figure 1. I have included a demonstration program for each routine so that you can type them in and use for yourself. Here is a quick explanation of what each one does.

BAR draws a filled box and can be used to clear or fill rectangular areas of the screen very quickly. You must poke the coordinates of the box's upper left and lower right hand corner into PTSPIN. See the demo program to see how it's done.

CHARACTER HEIGHT lets you place text on the screen in a variety of different sizes. The required height is poked into PTSPIN+2. The normal height is 18. See the demo program for more information.

CHARACTER SLANT gives you the ability to print characters sideways and upside down. The angle, in the range 0-3600 (tenths of a degree) must be poked into INTIN. However, only 0, 900, 1800 and 3600 will produce any result. See the demo program.

TEXT TYPE allows you to print text in different ways. The ways available are bold, italic, underlined, shadow, outlined and gray. You simply poke the required type into INTIN according to Figure 2. If you wish to mix any of the types, simply add their values together, for example to get underlined bold the value is 5 and poke the value into INTIN. To return to normal you must poke INTIN with zero. See the program for more details.

The first problem to come in this month is from R. O'Connor, from Locomotion. He wants to keep an address file on disc and wishes to know

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	CONTROL				PTSPIN				INTIN	
	+0	+2	+4	+6	+0	+2	+4	+6	+8	
SAR	11	2	0	1	X	Y	X	Y		
					upper-left corner					
CHAR HT	12	1	0		0	HT				
CHAR SLANT	13	0	1							ANGLE — 3600
TEXT TYPE	100	0	1							TYPE 0 (normal)

VDI ROUTINES

8	16	32
INPUT- INNO	OUTPUT	SHADOW

how to read and write files to disc. This can be accomplished in a basic program using the Open, Input#, Print# and Close commands that are discussed in full in the basic manual.

Writing such a program is not a difficult task, but could take quite a long time. A better solution would be to set up an address database using the free program — DBMaster One. Using this program you could set up an address file and search through it, sort it and manipulate it in a hundred and one ways that would be difficult to do in Basic.

A tip in time...

• If you find that memory is running short you can save a few k by erasing some accessories from your system disc. First make a backup of the system disc! The accessories are held in two files on the system disc, called Desk1.ac and Desk2.ac. Desk1.ac contains the control panel and printer install accessories and Desk2.ac holds the RS232 configuration and VT-52 terminal.

Decide which pair you can do without and then erase the relevant file. For example if you never use the RS232 interface and don't use the VT-52 terminal you should delete Desk2.ac. Doing this will save you some 6260 bytes (deleting Desk1.ac will give you 16400 bytes) which you can use for applications and R&M discs.

• If you have already obtained the latest set of bundled software then you should prefer your dealer until he gives you copies. The latest set comes on three white labelled discs and is made up of Magicrose (a really good database program), First Word (word processor), DBMaster One (database program) and Goodie (a really simple drawing program).

• If you have a program that you always run as soon as you have booted your ST such as a RAM disc, you can make it run automatically using the following method. First back-up your system disc. Next create a folder called AUTO on the

```
110 REM--- DRAWING SCREEN ---
115 REM
116 PAPER 2 : CLORAM 2 : COLOR 1,1,1,1
117 FOR C=0 TO 15
118 FOR CONTR=1,2
119 FOR CONTR=1,2
120 FOR CONTR=1,2
121 FOR C=0 TO 15
122 FOR C=0 TO 15
123 REM TOP LEFT X = 50
124 FOR X=0 TO 15
125 REM TOP RIGHT X = 100
126 FOR X=0 TO 15
127 REM BOTTOM LEFT Y = 100
128 WRITE#11
```

```
129 REM--- DRAWING SCREEN ---
130 REM
131 PAPER 2 : CLORAM 2 : COLOR 1,1,1,1
132 FOR C=0 TO 15
133 FOR CONTR=1,2
134 FOR CONTR=1,2
135 FOR CONTR=1,2
136 FOR C=0 TO 15
137 FOR C=0 TO 15
138 REM TOP LEFT X = 50
139 FOR X=0 TO 15
140 REM TOP RIGHT X = 100
141 FOR X=0 TO 15
142 REM BOTTOM LEFT Y = 100
143 WRITE#11
```

```
144 REM--- TEST TREE ---
145 REM
146 PAPER 2 : CLORAM 2 : COLOR 1,1,1,1
147 FOR C=0 TO 15
148 FOR CONTR=1,2
149 FOR CONTR=1,2
150 FOR CONTR=1,2
151 FOR C=0 TO 15
152 FOR C=0 TO 15
153 REM TOP LEFT X = 50
154 FOR X=0 TO 15
155 REM TOP RIGHT X = 100
156 FOR X=0 TO 15
157 REM BOTTOM LEFT Y = 100
158 WRITE#11
```

```
159 REM--- DRAWING SCREEN ---
160 REM
161 PAPER 2 : CLORAM 2 : COLOR 1,1,1,1
162 FOR C=0 TO 15
163 FOR CONTR=1,2
164 FOR CONTR=1,2
165 FOR CONTR=1,2
166 FOR C=0 TO 15
167 FOR C=0 TO 15
168 REM TOP LEFT X = 50
169 FOR X=0 TO 15
170 REM TOP RIGHT X = 100
171 FOR X=0 TO 15
172 REM BOTTOM LEFT Y = 100
173 WRITE#11
```

Four drawing programs that show different features of the ST

system disc. In it you must place the program that you want to auto run. Now when you boot the system with that system disc and booting has finished the usual blank screen will be replaced with the program rather than the desktop.

Well that's it for another month. As one last piece of advice I'll recommend that you go to the Ann User Show if at all possible. All the software that you've heard about during the last few months will be on show and you'll be able to have a good look at new hardware such as the ST hard disc from Atari. I should be at the show on the Friday. Maybe I'll see you there.



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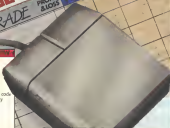
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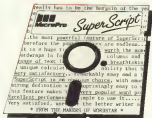
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TEL

More programs on way

A MDW division of publishers Schwann Exports has been created to boost the number of programs available to Atari users.

Already it has reached a number of license agreements that enable it to export a range of products from the US and to get British software distributed in America.

A key element in the new venture is Program Exchange, an open invitation to professional software houses and hobbyist programmers alike to join in the venture.

"We've been fortunate in being able to get a number of companies publishing software from many sources under one label," says John Deane, former Atari UK product manager who is in charge of the project.

"We would welcome the opportunity of evaluating software from professional and amateur authors."

Quite often, some programmers have the best new ideas and approaches to software, but their programming skills are weak. If an idea is brilliant but the author will work with the editor to make that program a quality file.

The venture will be launched officially at the Atari Computer Show at the Novotel, London, this month and Deane says details of the first batch of titles will be issued at that time.

SHOW IS ATARI'S LAUNCHING PAD

JACK Tremiel, Atari's chairman-chairman, will be getting across the Atlantic with a party of VIPs to attend the Atari Computer Show in London.

The show that takes place in the Champagne Suite of the Novotel, Harrogate, in London, from March 7 to 9 is the first Atari-specific exhibition to be held anywhere in the world.

Jack's presence indicates the significance we attach to it," says Rob Harding, Atari UK's sales and marketing boss.

"We see it as the perfect launching pad for some exciting new developments which for the moment must be kept under wraps."

Atari has refused to comment on rumours from the States that Tremiel will be bringing a new machine during his London stay.

However, other major exhibitors at the show are not playing it quite as tight-lipped.

The latest survey by Atari User has confirmed that well in excess of 100 new products will be unveiled at the show.

Of these some two thirds will be centred on the 8 bit machines — the 500XL and the 1300XL — while the remainder



And Jack Tremiel will be there...

use for the 16 bit ST range.

One company alone will be unveiling more than 40 new products, many originating in the United States.

Software Express and its subsidiary S&S has announced the mass launch as part of the group's bid to dominate the Atari market in the UK.

The most interesting contribution is likely to be Go North a programming language for the 8 bit machines. Multi-tasking, it will be priced at £24.95 on disc.

Yet another Atari market leader, Silicon Shop, will be launching at least 30 new products in the show. Once

again more will be American imports being brought over for the first time under license.

Microdeal has also jumped on to the American product importing bandwagon. The company has linked up with Multigen, one of the USA's main producers for the ST.

As a result Microdeal will be offering first time products for the ST including Time Dancer, a multi-screen graphics puzzle adventure, priced £29.95, the Multigen Utilities Programmers Dev. Kit, which enables programmers to look at any part of a disc or search for strings of characters, priced £39.95, and 30+ team graphics-driven team memories software, costing £49.95.

Multigen president Gordon Moncrieff and Time Dancer programmer Timothy Powers will be at the show to provide advice.

Not to be overlooked by its American connections, Microdeal itself will be launching Digi Help, a menu-driven disc recovery program for the ST, costing £29.95.

Companies have been piling out of the show to ensure that the first Atari Computer Show will be a truly remarkable event," says Derek Marston, head of Datasoft Publications, the show's organisers.

"I'm sure Jack Tremiel is going to be delighted with the results."

ST EDUCATION BARGAIN

In a special offer for educational establishments, Atari has bundled the 520ST with 800k disc drive, 12in monochrome monitor and mouse for £499, a saving of more than £150 over normal retail prices.

The same system with a 14in colour monitor costs £699 — £159 cheaper than the normal retail price. A

software pack including 1st Word, a window-based word processor, DB Master One, a database, ST Book and Logo programming language is included with both packages.

Atari marketing manager Rob Harding said: "The 520ST is making a major impact in education, with universities, colleges and

local authorities already purchasing in quantity."

The 520ST's leading edge technology at prices as high as £614, with the economic pressures in education today will lead to the machine becoming the standard educational tool.

The special prices for education are in force until the end of March.

Now deck

The XC11 replacement for the 1010 cassette deck has been released by Atari.

It is built by a major Japanese manufacturer, supported by the computer and matches the 1200's styling. Price is £26.

It is compatible with all Atari 8 bit machines but will be specially bundled with the 1300XL at a price of £169 according to an Atari source.

Atari's out of the red

ATARI has witnessed a dramatic turn around in its fortunes during the first financial year with Jack Tramiel at the helm. It is now firmly back in the black after recording a deficit of \$500 million during the previous 12 months.

"We took an ailing company, with

unsustainable losses, and we have come out with an overall profit", Max Bazzulaga, Atari UK's boss, told *Atari Star*. "So we are now in a position of considerable financial strength, because we not only know what we are doing, but are convinced we are right."

Canadian sales up

After experiencing what *Atari Star* is calling an ST dealer network in Canada, Atari has now resolved its problems and sales are going well according to reports.

Limited software availability had been listed as the main reason for dealer resistance to franchise agreements. But the growing number of ST programs being produced in the USA in particular seems to have overcome the Canadian reluctance to take on the machine.

General manager for Atari in Canada, Ian Kennedy, has said that current sales of the ST are being on target, and he expects 50,000 will be sold there within the next few months.

Atari now has more than 150 dealers throughout Canada and more are being signed up each week.

Colours by the million

ALL the colours of the rainbow – and a few million more besides – are offered by Technicolour Dream's graphics utility for the Atari 5 bit range from Red Box Software.

The program enables the user to create pictures containing the whole palette of 256 colours – 16 shades x 16 hues – which the Atari can display on the screen at the same time.

And because a further 128 more bits are used to mix new colours, the Atari's graphics capabilities are estimated to more than eight million real colours.

Graphics artist Mark Gifford considers the program as "the nearest thing to real painting. We have a screen for drawing an electronic brush and as much colour as Mr Gogh could ever have wanted."

Pictures produced with Technicolour Dream can be ripped into edit mode and saved in memory while being worked on, or dumped to an Epson 5400 (FDD) or similar printer and saved on to tape or disc in compressed form.

Technicolour Dream costs £8.95 on cassette and £12.95 on disc.



HI-TECH ZOO BEARS

IN London recently for the Top Fair was Mike Bushell, the pioneering electronics wizard who created the video revolution in the 1970s with the first consumer TV game Pong and went on to Atari.

When Mike sold Atari to Warner Communications he was prevented from developing any electronic game or toy for seven years.

But now that his non-compete time is up, Mike is

back in the business, and has set up a California-based company called Atari.

He has turned his electronic genius to creating sensational new toys. They are filled with all kinds of unusual electronic that make them do far things to challenge a child's imagination – like A.G. Bear's high-tech teddy bear that talks back to you or electronic bear talk.

Mike and friends, who shared offices at London Zoo,

US borrows UK techniques

MARKETING methods refined in Britain are being copied by Atari Corporation in America.

Building relations with software and peripherals to make up attractive packages has become common practice in the UK.

This tactic played a big part in helping the British home com-

puter industry out of the 1980s doldrums by stimulating sales.

This lesson hasn't been wasted on the Americans to whom bundling is a novel concept rarely used.

But now Atari has decided to market the 1300B in the USA as a complete starter package for computing and word

processing.

For £299 the purchaser gets the 1300B with mouse, printer also, drive and five software titles – two games plus Photo Painter, Plotter and Addresser. Atari is also putting together a package including the 1300T which is expected to retail for between £399 and £499.

OS goes on ROM

THE ST operating system is now available on ROM. Upgrades containing the rest of the necessary chips are available for installation at all main dealers at a cost of £25.

Big Top thrills

A GAMM intended to capture of the thrills and spills of the Big Top has been released in addition for the 6500A, the 1300B and 1300T.

Bullfight is an interactive mystery in which the player takes on the role of a small town newspaper caught up in a kidnapping.

Stunts must be tried to avoid brutal stunts. Bullfight games solved and designed in order to gain the opinion of the captain, the owner's daughter.

A colourful circus program introduces the characters and is included in the package with Bullfight, Bullfight and a ticket to Springfield. Price £29.95.

Atari steals the show at Las Vegas

VISITING the 1988 Winter Consumer Electronics Show in Las Vegas, it was hard to believe it was only 12 months since Atari introduced the CDS (Compact Disc Storage) system to the ST and SE computers.

The question then was: 'What about the software?' One 520ST and 1000 launch last year's CDS Atari stand was dominated by banks of screens running video snippets of software.

The only hardware consisted of two STs and two 1000s and one model each of the 65XE, 2600 and 1800.

I asked Jack Tramiel how Atari was doing one year on its reply: 'Very good. We still have lots to do, but so far very good.'

Company president Sam Tramiel went further: 'With the introduction of CDS of existing new products and programs we are announcing that this is the new Atari: a revitalized company with a clear ability to attract market segments.'

'We're the fastest growing manufacturer of popularly priced computers and the leading manufacturer of video games.'

According to Sam, programming for the ST is the fastest growing sector of the computer market, with 1,600 companies worldwide producing software for the range.

Atari has announced expan-

ded distribution plans for the 520ST in the USA, meaning new specialist shops - but it is a strategy intended to limit its most powerful machine now the 1040ST to authorized dealers only.

The 1040ST announced at the show and advertised as a business system is similar to the 520ST but contains 1 Mbyte

By JON DEAN

of RAM, a built-in 3½ double sided, double density drive and has TOS on ROM.

Software includes Basic for Word and Wordware and the machine is selling in the USA now at \$1,199.95 with colour monitor and \$899.95 otherwise.

Atari also introduced changes to the 520ST including a built-in ST modular existing standard TV set in the case and a package price with drive and monochrome monitor of less than \$700.

A new peripheral powered

soon is a 30-mbyte 5½ hard disc drive for the ST designed to deliver the increased power requirements for most professional applications.

One ST at the show had been set aside for live demonstrations from a guest software house.

The only new Australian demonstration that I tested (the marketed by Applelink). The Mouse (Bios): Hooked up to the ST was a Canto C2101.

Music Studio, which runs under Sam, has similar capabilities to Intell's Logic's Music System and can generate some music and has the ability to edit up to 16 seconds of comments.

Atari once again threw down the gauntlet saying 'We Saw How to Compute' and showed the Commodore Amiga 1010, Apple Macintosh (54000) and then even 520ST 52000 with colour monitor, naming a demonstration called Basic - a 30 ball bashing across the screen and back.

The Mac with its monochrome display was really

attractive and looked great in comparison with the colour computers.

Atari's guest came across At a time when Commodore is saying the Amiga is in different class altogether from the ST the Bione comparison proved the ST to be just as fast and capable - and at a better price.

A starter pack has been introduced for the US market featuring the 1000, 1002, laser printer, 1000 5.25in disc drive and five software packages - a personal finance manager, Sam Tramiel's game, simple music and graphics packages plus Atariwriter Plus, an even better word processor. All this at only \$399.95.

Is the support to continue on Atari products or are Atari putting all resources behind the ST?

Atari product manager John Skutch gave reassuring answers. Atari has an ongoing commitment to all owners of Atari computers. In addition to the 5500 (US only) and 10000, we have launched a new modem (US only) and the 8011 cassette drive.

New software titles? Our new 80 package features three new titles including Atariwriter Plus and other titles such as Pyramid and ProFootball should be available in the US early March.

'Our Raster is a due for launch then also this later presented at the show, could be named The Last Starfighter.

Third-party software support? New titles are being announced all the time. More companies are coming back to the ST who have been away for a while.

One final revelation from John was that a Giga type package will be available for the ST using Amiga's later the year.

A new Britannica Encyclopaedia Edition has been set up and according to executive vice-president Michael V. Katz there is an indication of a continuing and growing market for video games.



Atari went up in Las Vegas as a big way

* Jon Dean, former product manager of Atari UK, is managing director of DEC's division of Software Systems.

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Now the Alien Attack gets under way

I CONCLUDE this short series by completing our examination of the assembly language listing of *Alien Attack*. Figure 1 is a list of the data that is used to create the Player shapes.

DELAY

300

Because machine code operations are very fast compared to Basic a delay routine needs to be incorporated in *Alien Attack* so slow things down a little. This routine decreases the X register from 100 to 119 once a total of 1885 cycles (30 x 191). This is similar to the Basic routine: FOR DELAY = 1 TO 10: NEXT DELAY.

The address 38082 stores the number of cycles which is set initially at 20. This number is altered if various points in the program to increase or decrease the timing of the delay. The setting 39082 to 150 during the ship explosion routine gives a much longer delay as the alien counts through 14761 cycles (30 x 1480).

SRVP

- Lines 330 to 390 control the movement of the ship.

330

The current vertical and horizontal coordinates of the ship are transferred to the X and Y registers.

335

Address 602 is checked to see if the joystick has been moved. If moved then the X and Y registers are

Part III of STEPHEN WILLIAMSON'S series on how to produce your own machine code games

increased or decreased according to the joystick position.

The numerical values of the joystick positions are the same as used by the Basic command STICK(0). X and Y are stored in the ship vertical and horizontal slots to provide a record of the new ship position. The X value is stored in 53248 to set up the new horizontal position.

390-395

The data for the ship design (see Figure 1) is stored from address 37888 to 37904 (indexed by Y). A 0 is put into address 37887 and 37904 (indexed by Y) to erase pixels previously plotted at the top or bottom of the ship.

ALIEN 1

- Lines 400 to 430 handle the movement of Alien 1.

410

The Alien 1 colour register is cleared to see if it is dark red (50) which indicates that the Alien 1 has been hit. If hit then Alien 1 is not plotted and the program exits from this subroutine. X and Y are loaded with



the current horizontal and vertical positions of Alien 1.

420-440

The shape of Alien 1 is plotted in the Alien 1 player slots 138144 to 138158 (indexed with Y).

450

0 is stored in 38140 and 38158 (indexed with Y) to erase pixels previously plotted at the top and bottom of the Alien 1 shape.

The accumulator is loaded with whatever value is held in address 20. Address 20 is part of the Alien clock system and the value held in the address changes rapidly. This is used to provide a pseudo random number and thus plot a random flight path for Alien 1.

Many arcade games suffer from the fact that few or no random elements are included so that after playing for a while you learn to anticipate the movement of enemies or alien spacecrafts. In *Alien Attack* the flight paths of the Aliens conform to a general pattern but by using the routine it is impossible for the player to predict at what point an Alien will change direction.

By performing an arithmetic shift left (ASL A) on the accumulator the carry flag is set or not depending on whether bit 7 of the accumulator is 00 or 01. The carry flag is checked — it will either be 0 (off) or 1 (on) for set — and if set and Y is increased to provide a new vertical position for Alien 1.

The horizontal position of Alien 1 is checked to see if it has reached the right hand side of the screen

coordinate 128) and if so Alien 1 must change direction and the Alien 1 direction flag field at 10B is changed.

450

A similar check is made on the left-hand position and if the Alien has reached there (coordinate 50) then the direction flag is changed X is increased or decreased according to the direction flag.

470

The vertical position of Alien 1 is checked to see if it has reached the bottom of the screen. If so Y is loaded with 0 so as to start the Alien off again from the top of the screen.

480

The updated horizontal position is stored at address 53246 (Alien 1 horizontal register) and X and Y coordinates are stored in the Alien 1 horizontal and vertical stores.

ALIEN 2

• Lines 490 to 523 handle the movement of Alien 2 in the same way as Alien 1. The only difference is that instead of the ASL operation to create a pseudo random number the LSR, (logical shift right) operation is performed at line 540.

ALIEN 3

• Lines 530 to 560 handle Alien 3 movement. Line 530 performs a similar arithmetic shift operation to Alien 1 but the result instead of acting on the vertical coordinate acts on the horizontal coordinate to give a different type of random flight pattern.

SHIP

• Lines 570 to 740 handle the firing of the ship missile.

570

Address 540 is checked to see if the fire button has been pressed. If not pressed then the program jumps 32 bytes to avoid creating a new missile.

580

The ship missile fire flag (address 1534) is checked to see if a missile is already

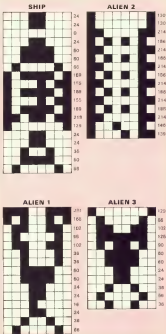


Figure 1 Ship and alien shape data

on the screen. If on screen then no further missile can be fired until the program jumps 25 bytes to avoid the new missile collision routine.

800

A 2 is added to the horizontal position of the ship to give the horizontal coordinate value of the missile so that when the new missile is plotted it will appear in the correct position above the ship. This horizontal position is stored in the ship missile horizontal register (address 52552). Y is stored in address 37839 and 37831 (loaded with Y) plots a pixel on the ship missile strip.

790

Step 1633, which holds the current ship missile vertical coordinate, is checked to see whether it has reached 4, which means that the missile has gone off the top of the screen. If so, the missile need be plotted no further and the program exits from this routine.

710

A 1 is plotted in the player missile strip for the ship missile (loaded with Y). Y is decreased so that the missile will move up the screen the next time the program reaches the fire routine.

720

The value of Y is stored in sound channel 1 pitch register (37847) to give the missile sound effect. A value of 170 sets the volume for sound channel 1. A zero in address 53748 gives pure sound.

730

If the vertical position of the missile has reached 4, this again means that the missile has gone off the top of the screen and the missile flag in 1636 is set to 0 to allow another missile to be started. The sound channels are also switched off if the missile is off the screen.

800H

- Lines 780 to 810 handle the movement of the alien missiles.

760

A similar routine to that used to determine the flight pattern of the ship is used to provide a random number 10 or 11 and this decides whether the Alien 1 missile is

dropped. If the carry flag is clear then no missile is dropped and the program jumps 26 bytes.

If the carry flag is set the start position of the Alien 1 missile is set to the current Alien 1 position plus 2 so that the missile first appears on the screen immediately below the middle of Alien 1.

770

A 4 is loaded in the Alien 1 missile flag store at 1636 and the vertical coordinate stored in 1639.

780

If the Alien 1 colour register is dark red (83) and therefore Alien 1 has



been destroyed, the program jumps 21 bytes to avoid plotting the missile.

700-800

A 4 is plotted in the Alien missile strip (37847 to 37849) indexed with Y to create the Alien 1 missile. 0 copies the pixels previously plotted at the top of the missile.

Y is increased by 1 merely to plot the missile further down the screen the next time this routine is reached. Y is stored in the missile vertical store and checked to see whether it has reached 240 and is therefore off the bottom of the screen. If so the missile flag is set to 0 and Y decreased so that the missile stays off the screen and a new missile can then be plotted.

ALLEN 2

- Lines 810 to 880 handle movement of the Alien 2 missile in a similar fashion to that of Alien 1 missile. The new missile is dropped if the carry has been previously set from line 780.

This means that the Alien 2 missile is dropped at a different time to that of Alien 1.

ALLEN 3

- Lines 880 to 910 deal with the Alien 3 missile in the same manner as that of Aliens 1 and 2.

COLLISION

- Lines 920 to 1080 control the collision between the alien or alien missiles and the ship.

930

During the development of the program it was found that player pixels were left plotted at the bottom of the screen instead of moving the alien and ship subroutines. It was simpler to add line 930, a routine that clears the bottom of the player strip of any debris that has gathered there.

Because modern code is so fast, ship routines make no discernible difference to the speed of programs. It is often easier and simpler to add a routine to solve the symptoms of a bug in the program rather than spend a long time hunting through the program to find the bug.

940

This line checks the collision detection registers to see whether the ship has been hit by an alien or alien missile.

950

If the ship has not been hit the program jumps to the kill subroutine to find out whether the ship missile has hit an alien.

960

All the sound registers are cleared.

970

160 is stored in address 39063 to slow down the dairy routine.

980-990

The ship colour register (204) is loaded with 88 to turn the ship red. 84 is stored in address 38878 (44) in the channel 0 volume register (53781) and 255 stored in the channel 0 pitch register (53762). This combination provides the beep for the white noise explosion sound effect.

The X register is stored at 1544 so that it can be reloaded after the dairy routine has been executed. A loop



decreases X from 144 to 128 to run the explosion sound and flash the screen background colour between red and black. 63 stored in address 710 gives red and 0 gives black.

The formula for calculating the colour to put into colour registers is $\text{value} = \text{colour} * 16 + \text{brightness}$.

9000-1000

Initialisation operations to run the game after the ship has been destroyed.

1000

Sets the starting coordinates of the ship.

1010

Clears the sound registers.

1020

Clears the PM data stores.

1030-1040

Alien and missile stores are cleared.

1050

The collision detection registers are cleared and the delay timer reset to 20.

1060-1070

Score 1048 which holds the number of lives left is reduced by 1. If no lives are left then the subroutine return address is pulled off the stack by the use of PLA. PLA and the program returns to 8000.

0 clears the lives left indicator at the top of the screen and according to how many lives are left diamonds (character 90) are displayed at the top of the screen (address 24000).

KILL

Once 1060 to 1070 handles the collision between ship missile and alien.

1100

The collision detection registers are checked to find out if an alien has been hit. If not then the program returns from the subroutine. X is loaded with a value according to which alien has been hit.

1110

64 is stored at 53708 and the sound registers cleared.

1120-1130

A loop is set up to reduce the Y value

from 144 to 127 to create an explosion type sound similar to that of the collision routine. The delay timer is not changed so that the game feels only barely within an alien's hit.

The colour register is indexed by X so that the Alien that has been hit will change colour to red (53). Whenever the program returns to the Alien plotting routine, a red alien will be plotted off the screen.

1140-1150

Initialisation and clearing routines.

1160-1170

These lines handle the increment of the score.

Score 1047 to 1049 hold the character values of the score (16 to 26). A value of 16 is character 0 when displayed on the screen and 26 is character 9.

The score increment routine can be thought of as similar to the procedure that we go through when first learning to add up 1 to 3-digit numbers. For example, a score of 123 means that 3 is in the 1s column, 2 in the 10s column and 1 in the 100s column. Score 1049 keeps track of the 1s. 1048 the 10s and 1047 the 100s.

If the value of the 1s has not reached 26 for score 91 then the 1s are incremented by 1 until the 10s and 100s are left alone. If the value of the 1s has reached 26 (at score 91) then the 1s must be reset to character 16 (in 0) and the 10s incremented by one to give a score of 10, 20, 30 and so on.

If both the 1s and 10s have reached a value of 26 (equivalent to character 9) the score is 99, 199, 299 and so on and both the 1s and the 10s must be set to zero and the 100s incremented by 1 to give a score of 100, 300, 500 etc.

Finally the 1s, 10s and 100s are displayed at the top of the screen to show the current score.

1210

All alien colour registers are checked to see if they are red (53).

1220

If all aliens are red the timing register at address 39262 is decreased by one. Each subsequent wave of aliens will then be faster. This ensures that the skill needed to play Alien Attack increases the longer the game is played ie. providing the player loses

000	0000	000	0000	000	0000
001	0001	000	0001	000	0001
002	0010	000	0010	000	0010
003	0011	000	0011	000	0011
004	0100	000	0100	000	0100
005	0101	000	0101	000	0101
006	0110	000	0110	000	0110
007	0111	000	0111	000	0111
008	1000	000	1000	000	1000
009	1001	000	1001	000	1001
010	1010	000	1010	000	1010
011	1011	000	1011	000	1011
012	1100	000	1100	000	1100
013	1101	000	1101	000	1101
014	1110	000	1110	000	1110
015	1111	000	1111	000	1111
016	0000	000	0000	000	0000
017	0001	000	0001	000	0001
018	0010	000	0010	000	0010
019	0011	000	0011	000	0011
020	0100	000	0100	000	0100
021	0101	000	0101	000	0101
022	0110	000	0110	000	0110
023	0111	000	0111	000	0111
024	1000	000	1000	000	1000
025	1001	000	1001	000	1001
026	1010	000	1010	000	1010
027	1011	000	1011	000	1011
028	1100	000	1100	000	1100
029	1101	000	1101	000	1101
030	1110	000	1110	000	1110
031	1111	000	1111	000	1111
032	0000	000	0000	000	0000
033	0001	000	0001	000	0001
034	0010	000	0010	000	0010
035	0011	000	0011	000	0011
036	0100	000	0100	000	0100
037	0101	000	0101	000	0101
038	0110	000	0110	000	0110
039	0111	000	0111	000	0111
040	1000	000	1000	000	1000
041	1001	000	1001	000	1001
042	1010	000	1010	000	1010
043	1011	000	1011	000	1011
044	1100	000	1100	000	1100
045	1101	000	1101	000	1101
046	1110	000	1110	000	1110
047	1111	000	1111	000	1111
048	0000	000	0000	000	0000
049	0001	000	0001	000	0001
050	0010	000	0010	000	0010
051	0011	000	0011	000	0011
052	0100	000	0100	000	0100
053	0101	000	0101	000	0101
054	0110	000	0110	000	0110
055	0111	000	0111	000	0111
056	1000	000	1000	000	1000
057	1001	000	1001	000	1001
058	1010	000	1010	000	1010
059	1011	000	1011	000	1011
060	1100	000	1100	000	1100
061	1101	000	1101	000	1101
062	1110	000	1110	000	1110
063	1111	000	1111	000	1111
064	0000	000	0000	000	0000
065	0001	000	0001	000	0001
066	0010	000	0010	000	0010
067	0011	000	0011	000	0011
068	0100	000	0100	000	0100
069	0101	000	0101	000	0101
070	0110	000	0110	000	0110
071	0111	000	0111	000	0111
072	1000	000	1000	000	1000
073	1001	000	1001	000	1001
074	1010	000	1010	000	1010
075	1011	000	1011	000	1011
076	1100	000	1100	000	1100
077	1101	000	1101	000	1101
078	1110	000	1110	000	1110
079	1111	000	1111	000	1111
080	0000	000	0000	000	0000
081	0001	000	0001	000	0001
082	0010	000	0010	000	0010
083	0011	000	0011	000	0011
084	0100	000	0100	000	0100
085	0101	000	0101	000	0101
086	0110	000	0110	000	0110
087	0111	000	0111	000	0111
088	1000	000	1000	000	1000
089	1001	000	1001	000	1001
090	1010	000	1010	000	1010
091	1011	000	1011	000	1011
092	1100	000	1100	000	1100
093	1101	000	1101	000	1101
094	1110	000	1110	000	1110
095	1111	000	1111	000	1111
096	0000	000	0000	000	0000
097	0001	000	0001	000	0001
098	0010	000	0010	000	0010
099	0011	000	0011	000	0011

no lives, each alien wave is faster than the preceding one.

The routine does not allow the delay to go beyond 0. Decreasing a value of 0 in machine code gives a value of 255, and this would have the effect of slowing the game down to a snail's pace.

If all three aliens are hit after a PLA instruction the program jumps to the clear routine. The PLA instruction is used in a similar way to the Bacc command POP, because we are jumping out of a subroutine without going back to the return address.

The program has now completed one cycle of its operation and returns to the control routine again and continues in this manner until all the ship has been lost and the game is over.

Alien Attack fits into just under 1 kb and demonstrates something of what can be achieved by machine code without using a lot of memory.

I hope that this series of articles has encouraged you to have a go at creating your own machine games. The techniques I have described in Alien Attack can be copied and developed to produce very sophisticated games.

Not everyone who writes their own machine code games is going to become a millionaire, but machine code programming can be a fun and satisfying pursuit.

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The Worm completes a Silicon Dream

By Brillig

Snowball



Level 9 Computing

Return to Eden



Level 9 Computing

The Worm in Paradise



Level 9 Computing

As promised last month here's a treat for Level 9 fans, as I shall be reviewing in varying degrees of depth the Silicon Dream trilogy, now completed with the long-awaited arrival of *The Worm in Paradise*.

The series marks the culmination of Level 9's evolution since the arrival of *Snowball* with the claim of 7000 locations.

Snowball was much in the style of previous Level 9 games. In that it was text only, had video-screen input, and made great play of the huge number of locations. Of the trilogy, however, it is my personal least favourite for that very reason.

The obsession that biggest release was prevalent at that time, and indeed to some extent still is, having only been overtaken by the obsession with graphics.

That *Level 9* has always been the largest adventure writers in the world seemed to result in the claim of a huge number of locations.

In my view there is little point in having that many locations when about 5-600 are all the same. Accepting this, however, means that the player can assume the identity of Kim Kimberley and begin to solve the problems of the giant frozen ship *Snowball*.

You start the adventure having been accidentally assimilated by the ship.

You are a kind of intergalactic trouble-shooter so the very fact of your membership indicates problems. In fact there is a subplot ahead and you have to sort him out to save the 1 800 000 (minus you) frozen bodies

en route to the planet Eden. A to start a new life.

The adventure is set in the 32nd century, and is based very loosely on the Larry Niven novel *The Moon is God's Eye*. With the exception of the beginning of the program it is a highly believable impression of how such an enterprise might be conducted.

It is the rather tedious start to the game which made it difficult to get into. For instance, it seemed illogical to me that as the sleeper placed aboard in the event of trouble the ship's security systems should activate nightingales to keep you to a somewhat more permanent sleep on discovering you are awake!

Once out of the initial stages the game seems well structured and has a sense of purpose — much better than some games with just trails to bash or a few treasure to dig for.

The plot and implementation mean that 7000 locations are a bit excessive, and the spelling is not all it could be. Although there are uses for most objects not all are essential and once the initial code cracking is done the game is a little too straight line in logic for my liking.

If so I wish you have been stuck at the beginning for some time, a few hints may be in order. After you have pushed the lever and said Out to leave the coffin you should go north and push three buttons in turn.

Go back south, get up on to the coffin from where you can get up to the main room. Remember always to keep a closed door between you and the nightingales, and keep still when they are around.

Nightingales will only enter blue

mortuaries on the white level for some reason (which Kim Kimberley ought to know).

Final hint: if you want to get out of the Mortuary area you should look for a lift.

In Return to Eden we discover that not only are the escapees of Snowball an unpleasant lot, in that you have been blamed for the murder of the crewman and sentenced to death (but that the planet Eden on which your counterpart has landed has most definitely gone to seed).

This game marked Level 9's first departure into graphics on several machines, although Atari owners were spared this doubtful privilege and Red Moon.

Again the idea is taken in part from a fantasy-adventure author, this time Harry Harrison's Deathworld. Your task is to clear your name with the occupants of the city of Enoch, both physical and mechanical, utilising the Race and Force.

This gives rise to some devious problems and to some quite dreadful

yet enjoyable puns. The only slight problem I had with the game was again one of logic at the start.

It seemed a little odd that rather than use the conventional way of killing people the crew of Snowball suffers from the James Bond villain syndrome.

This entails using the most convoluted and complicated method imaginable of causing the hero's death. Hence rather than shoot him/her they try to lure you with the engines as they fly past! A little implausible I would say.

The engine incidentally can be avoided by burrowing underground.

Other than the fairly minor gripe Return to Eden sits for the best of the three games in my opinion and can be played without having ordered Snowball (since a manual is included in the instructions).

All this has left me rather short of space for Worm in Paradise. The new Level 9 adventure system is a wonder of programming, with the type-ahead an absolute boon. Again I find the

graphics a little too Spectrum-like and rapidly turned them off.

In Worm you play a citizen in the next century and again to the Seat of Power. It's not quite if the game is a true reflection of Peter Austin's political leanings — a title to the right of Gandhi, that — but the game has a political slant.

Doubtless I shall return to this game fairly soon when I have made a little more progress, but as for Return to Eden is the best of the three for me.

★ ★ ★

Final note. A couple of licensing deals have been brought to my attention. Adventure International has signed up with US Gold so we may see Questquest II at last, and Signose Software has signed up with SBCS. (yes, that's how I pronounced it too). They'll be previewing at level one next adventure at the Atom User Show.

■ Next month I shall look at *Ashes of the Moors* from Mosaic/Level 9 and hope fully have reviewed a glibbit or two.

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Move over Atariwriter... here comes Superscript

— says André Willey

WORD processing is probably the first serious application that any home computer will be put to. Like most other micros, there is a glut of word processing packages for the Atari, some more versatile than others, some easier to use, some faster, and so on.

The standard word processor has for some years been Atari's own Atariwriter cartridge, which is very easy to use and reasonably versatile. It was designed to run with 128 machines, and worked pretty well within those limitations.

Now that the 80586, and 1300C with 64k and 128k respectively are available, it was only a matter of time before a new program would be written which would use these new facilities to the full. Such a package is Superscript, written by Precision Software and marketed by MicroPro, the makers of Wordstar.

Let's get the bad news out of the way first. Since Superscript requires a minimum of 64k, and preferably 128k, you can't use it if you have an old series Atari 400 or 800. It would not have been possible to pack all of the features into a 48k machine, and still have any space left to store your documents.

The other piece of bad news is that it only comes on disc, but quite frankly I feel that anyone who is seriously considering word processing must realise that a disc drive is an essential item anyway.

Even though discs are pretty reliable, I feel that MicroPro has let the users down badly when it comes to back up. When paying this much for a program, you would expect either a backup to be provided at nominal cost, or as you are told in the licence agreement that you should always make a back up before using the product.

Even though you are warned to

make five back-up copies to be completely safe, the program disc is quite heavily copy-protected, leaving you somewhat in the lurch if your disc is damaged. Come on MicroPro, be fair to the customers who pay your regard!

If I were to describe every feature that Superscript has to offer, there wouldn't be enough space in this magazine to post it.

The fully ring-bound manual provided is over 240 pages long, and I couldn't hope even to paraphrase it here.

It is split into sections, starting with a couple of tutorials on major aspects of the package, then going into advanced use, and finally a very comprehensive reference section — some 100 pages in total.

Unfortunately despite all of MicroPro's promises, there is no quick reference card, a serious omission in a package of this nature.

Once you've booted up your master disc — which, partly due to the copy-protection used, seems to take forever — you may create your first work day. This will be formatted in DOS 2.5 mode, even to the extent of using enhanced density if possible, and will contain your documents and your printer driver file.

The file can be set up from the 11 types provided, including all of the Atari printers: Epson, Diablo, NEC and so on, or customised in any way you wish for your own printer. Unusually

you can even use an RS232C printer.

Assuming that your printer handles them, Superscript will support the full international character set, dozens of print modes, spacings, character sizes and so on, and any special features such as tabs or downfold cuts that your printer can offer.

By far the most popular non-Atari printers in use are the Epson range, and I use an Epson compatible NLQ printer with which I found that all of the international characters print exactly as seen on the screen — which means that I can at last write André rather than Andre!

The same goes for that elusive 15 pin. Most printer-drivers can, of course, be loaded at will, a feature which would allow you to attach a serial and a parallel printer at the same time — perhaps a desktop and a dot matrix — and switch between them with ease.

Once on to the main screen, the colours of which you can customise on the default file, just as you can margin, centering and justification, you can start typing.

As with most word processors, you just type in your text with no thought of line format, and the only time you need to hit the Return key is to signify the end of a paragraph.

Words will be moved down automatically to the next line if there isn't room for them on the current one.

I found that sometimes the time taken to insert new text within a long document was rather greater than I'd have liked, with frequent flick or five second pauses while it fixed up some line space.

This could become a little annoying at times — like now, when I am editing an article for half way through a

“It will support the full international character set, dozens of print modes, spacings and character sizes.”

review.

When I read long documents by the way, I meant just that. On a 1500L there are two separate text buffers each 780 lines long (about 64k in total). This review takes up just over 300 screen lines or about 200 lines by the time it's printed out on an 80 column printer.

I managed to re-load it five times before I ran out of memory — that's about 1000 printed lines. On an 8000L you get about half that and on a Macintosh you get a meagre 300 to 350 printed lines or about 16k.

Working within the limitations of 60 columns of text is normally somewhat tricky when you think that the printed will be re-formatted to use 80 columns.

This means that typing a table requiring say 70 columns of text is almost impossible. Thankfully an option has been added to set the line length to any size up to 240 characters. You simply scroll a 40 character window over the text and any tables can be set as wide as you desire.

This is especially useful when you realise that SuperScript has a calculator function built in giving it many of the basic functions of a spreadsheet.

All you need to do is lay the numbers for your table out in rows and columns and SuperScript will total them for you taking both negative numbers and bracketed numbers in subtractions.

It will also allow you to handle

to other menus as required.

There are 11 options each of which leads to a sub-menu and a help function. This can also be obtained at any time by hitting the Help key.

Selection of items from the menu is possible in two ways. The beginner

“The beginner may find some features hidden under the most unexpected menu titles.”

can highlight each feature with the cursor keys and hit Return when they've made their choice. This procedure can become tedious very quickly so you can just as easily type the first letter of the option. For example instead of moving the cursor to Document (Return) then to Load (Return) all you need type DL.

At first you need to look at each new menu to see what your options are but after a few days you find yourself using only the abbreviations.

My only criticism is that a beginner who is bound to start by reading the review may find some features hidden under the most unexpected menu titles. For instance, would you really expect a heading of Set to give you a sub-menu including all of the quite comprehensive search and replace options?

Once you're used to it though such obscure operations as setting a new margin — Select a main menu then Layout then Margins and finally Left — become so easy as Select LML.

If after all this you still find that some operations take longer than you'd like then you can always define Macros which allow you to execute a whole series of commands and text entries with a single keystroke.

You may wish to put your full name in bold face on the key ID for requests. This possibilities are endless.

Another important feature of SuperScript is a very powerful mergepage. This is the ability to use a standard letter and make the computer print multiple copies with different names and addresses on

each, and perhaps personalised with Dear too.

You may use either a file you've written yourself via SuperScript or merge with a database, such as SuperStar or FileManager 500 or any other shop can create label-type output files with one field per line.

You may use any or all of the fields at any position within the letter and even use fields more than once.

Fields can be variable or fixed length — so fill address lines or tables — and even conditional which will allow names and addresses to be printed with variable numbers of lines. You can even specify to skip certain records.

One slight problem in this area is the need to limit the size of your merge file to fit within your RAM or to list two files with the LINK option.

This would preclude the easy use of very long — over a couple of hundred records — database merges without first modifying the merge file which would involve you in edit work.

Spell-check of course, is not overlooked and you can configure your 30000 word dictionary doc for either British or American spellings. This is a godsend for anyone who has been driven up the wall by the computer's politely informing you that you've spelt colour wrongly.

You can also add or delete dictionary words whenever you like.

Spell check can even give you statistics such as number of words, number of unique words, number of paragraphs, average word length and even a breakdown of how many times every word in your document has been used. There is no near-sin chopping but that really is the province of much larger systems.

All of the normal block manipulations are present, which include delete block (or column label), move, duplicate, save or delete block, move character, word, sentence, reformat line, full-line, paragraph, rest of document or whole document. The list is endless.

You can even have two documents in memory at the same time (if you've got 128k) and freely move text between them both which is especially useful in redrafting mode.

So far I have only listed the major features but there is so much more

“An easy way out of a tiresome menu-selection procedure.”

multiplication, division and percent operations before you even enter the figures on to the page via a mini-calculator feature. If all this sounds a little complicated to grasp, which perhaps it is until you get used to it, there are examples on the disc and worksheets in the manual to help you out.

Every time you want to use a feature such as the calculator facility you press the Select button to bring up the main menu from which you go

You can set headers and footers to print at the top and bottom of each page (which can contain as to three parts: left-aligned, centered, and right-aligned).

Page numbers are entered for and Superscript will adjust its settings automatically for you to make odd and even numbered pages have larger central margins and adjusted headers/footers settings ready for binding into book form.

Movement within a document can be either relative or absolute. You may go to the top/bottom of the text or move up/down a screen as to the left/right of a line, or forward/backward by words, sentences or paragraphs.

Tab positions can be set both within and down the page. You may use carriage or insert mode for text entry with hard or soft hyphens and spaces, and use the normal cursor keys (with or without using the Control key — as the choice is yours).

There are keys to change whole

“Every silver lining has a cloud, and Superscript is no exception.”

words to upper/lower case, change the screen colours, add non-printing characters (useful), and use multiple levels of indent for sub-headings.

Unfortunately every silver lining has a cloud and Superscript is no exception.

I was hoping that this paragraph would not be necessary because for once I received an early beta-test copy of the program and was wanted to comment on any faults that I found.

But I duly did, explaining a couple of very easy-to-fix problems, but ones which were very annoying in general use.

That Precision Software had a full three months to fix them before the final release came out — right? Wrong! It seems I was wasting my time explaining to them how an Atari works, and that there are a number of little problems.

Firstly and most frustrating of all the Delete key's function is slightly different to the normal Atari one. When any Atari user hits Control-Delete, he would expect the character

under the cursor to be deleted, but in Superscript, for reasons known only unto themselves, it deletes the character to the left.

As an additional function, this would be fine, but when you're so used to the normal operation of your computer, it really can be quite annoying.

This problem can also cause text to back-up into the previous paragraph — even to the extent of pecking two short paragraphs so to one line, or leaving multiple spaces within a document.

The re-format option will not correct this, so unless you happen to notice it, nothing after the first end-of-paragraph marker will not be printed.

The really dumb thing is that the manual doesn't even mention Control-Delete, and only talks about Shift-Delete, which apparently does exactly the same thing! So why change it in the first place? Your guess is probably as good as mine!

Of course, if you do finally get used to it, it doesn't help you if you then want to do some ordinary programming afterwards.

The other main problem I warned them about is extremely silly, but has several nearly repulsive results. Thankfully a slightly knowledgeable Atari owner could spot and correct it quite quickly, but that's not really the point, is it?

The printer driver filename contains a character to tell the printer to do a Carriage Return for EOL, as it is sometimes known. Precision apparently put this in because the Atari range of printers is listed as using the Atari internal code of 158, whereas most printers use code 13.

However, what they totally forgot is that any use of code 158 is translated automatically into a code 13 by the Commodore or RS-232 interface anyway.

Thus, code 13 should never be used as an EOL, because the operating system will know that the line has been finished and will then add its own EOL just to make sure.

Thus, at the end of a paragraph, it adds an extra Carriage Return (at the correct 158 type) when the last line is printed. The next page you print will then be one line lower, and so on.

On either a multiple-copy printout

or even a shrunken mailmerge, each page is printed one line lower down than the last, until about 30 letters later it starts printing over half-way down the page.

Also, the Store printout on disc won't work at all, which is really frustrating if you want to use Superscript to prepare formatted files for use with another package, such as uploading as a Comma package, use with a database or with your own programs.

If you come across anything like this, and you're not one of the few people using an Atari model printer, try changing the 13 to a 158 in your printer-driver file.

Perhaps one of the six or seven

“In terms of value for money it really cannot be beaten.”

people I spoke to at Precision and MicroPro will actually take note of these points before the next revision of the product is released?

Anyway, regardless of these few problems, I found Superscript to be a generally excellent product, giving more features than any other word processor I've come across for the Atari.

Unfortunately, due to the added support being provided by MicroPro, their have seen fit to raise the price to £79.95, which will put it out of the price range of some prospective users, although in terms of value for money, it really can't be beaten.

While it may seem to be twice the price of Abacus, by the time you've added the cost of a printer-driver and a good spell-check program, there's not really anything at it.

If all you want to do is type the odd letter, then Asawriter is probably more up your street, but I can wholeheartedly recommend Superscript to anyone who is thinking of using their Atari for any sort of serious word processing, and certainly to anyone who is a little fed up with the limitations of Asawriter.

Anyway, assuming the Delete bug is soon cured, I hope which word processor I'll be using in future.

AM awful lot of the letters I get regarding the more technical aspects of the Atari could be answered by one book — Mapping the Atari from Computer Books.

It is a complete guide to the memory locations used inside the Atari. Everything is there — operating system control bytes, colours, playfield lists, graphics, sound, video/output, even basic pointers and variables are covered.

But the book is much more than just a list. Many of the more complex locations have quite lengthy explanatory notes, and there are lots of programs to show you how to use them.

Some locations have as many as three or four pages given over to them, and while such a book can never be a complete tutorial to the workings of a computer (it's Atari) as close as you could possibly get.

Even better, there is now a revised edition which also covers all of the locations changed for the XL and XE computers (even the aborted 1302MX).

These are listed in the form of a very large appendix, so you can use at a glance which locations refer to which type of computer — and everything is listed in both hex and decimal.

Other appendices cover vertical

blank functions, system timers, display lists and playfield graphics, connectors ports (including the parallel bus) and even the workings of DOS 2.5.

There is also an alphabetical index to all of the locations covered so you can quickly find out what the location mentioned in a particular program or article actually does.

Last, but by no means least, the book finishes with a couple of very useful programs for XLUX owners. One will convert your buggy Revision B Basic files in the XL range into the improved Basicplus C, as provided with the XE, and the others allow you to transfer the operating system from ROM into RAM, so then you can try your hand at modifying things for yourself.

I really cannot recommend this

Answers to those Atari queries



book too highly, so if you feel tempted to write in to us asking 'What does location xxx do?' or 'How do I use POKE 666?', then you may find that a copy of the XLUX edition of Mapping the Atari will answer all your questions (and more).

My own copy is never far from reach, and is almost certainly my most-used reference work.

While it may seem a little expensive to some of you at £10.95, I think you'll find it worth every penny. So run and get one today, and start finding out a little bit more about what's going on right under your nose.

DIY WORD PROCESSOR

I DON'T really know whether to review Speedscript also from Computer Books as a book or a piece of software, as it really is both and neither. What you get for your £12.95 is a 114 page book which boils down to the complete listing of a quite reasonable word processor, written completely in machine code.

Two sorts of people will find this book useful — the ones who just want a good cheap word processor and don't mind a bit of typing — and those who have probably got a word-processor already but are fascinated to know how they work.

The book works on both levels, as it contains an easy-to-type form of the program (in Basic, with extensive checksum error checking), plus the complete, and well-commented

assembler listing.

The word processor itself is surprisingly powerful, giving you a whole range of simple but flexible commands. You can do all the usual things such as margins, headers/footers, spacing and justification, page numbers, underline and special paper features, simple macro keys, and more.

You also have search/replace, plus full text movement commands and move/delete by letter, word, sentence or paragraph. The whole thing works in a very attractive re-defined character set using Atari Mode 3 for greater clarity.

An interesting idea then hampered by the amount of typing involved (about 95 pages of mainly numbers), but of great use to the



machine code programmer who wants to pick up some tips.

If you just want a no-fuss word processor you may prefer to latch on a little bit more and get one that doesn't require quite so much work.

Andrew Willey

NEWS

**WORD
WINGS
DOWN
FROM
WICK**

CATHERINE Glass, the company that made the Michael's presentation bowl and many other famous engraved glass trophies, is using Michael's for a pilot project which may eventually lead to a network linking it with on-line sales, agents and concert promoters.

Persons all over the world for an excellent paperweights and glass and silver jewelry, the firm has a greater need than most for reliable, high quality communications.

Reputed to be the best shrimp in the world, you can get it marinated, flambéed, the usual, just hot sautéed with fresh and dried, or eaten with a little bit of butter and a squeeze of lime and a dash of salt and pepper. All you can do is eat it.

Considering the shortcomings of the postal system it would be ideal for everyone to have their own mailbox, an e-based ElectronicLink network to facilitate ordering, financial planning and stock control and e-business and systems security. **Heidi Lofgren**

It might even be possible to open up a serious art media program among the 11,000 people around the world who are registered collectors of our papermaking so they can go online for the latest news, ideas and products.

The password is...

BY THE way, the new John Deere 4400s that are listed with their personal address features and a unique password.

This is usually a less heated — and, in the enormous number of letters the system will accept — and the solution is, of course, that to change the password to allow its removal.

It means making the long island to the, the highway there where the largest ship is coming in.

State system manager Colin Higgins. "The very essence of the bill is to establish that in the early days we managed our own

1000

"However, the problem is nearly everyone after taking the most intelligent steps to establish the industry's credibility we refer them to the original personnel they were interested, which is kept an enormous list or referred into a head office, and refuse to include another."

"But it's not proof up the fact that Johnny here should always be carried in bags is raised at wherever passport they are using at the Chinese - although, too in the Chinese a sign - just in case they suffer a lapse of memory."

Hold that train...

FIAT was not showing off. Platform 4 can be easily modified to MicroLink-making subroutines and just send signals to computers from control office.

It also holds a Pan American
American League or National
All results could then run back
British Rail tickets and the
slower connections, and
Meredith's new telephone

South Ltd is required to pay a total of £1 - or £2 on *Palmer's* account - and the charge for other accounts declines to £1/3 a month.

LINK OVERCOMES HANDICAPS

BOB RICHMOND, has been chosen as the electronic engineer for an on-going scheme to introduce deaf people to the world of information.

Over the next few months the Coastal Remedial Clinic in Dublin will operate a pilot project involving both a dozen or so people on normal intelligence but who have physical handicaps ranging from slight visual impairment to the inability to move on their own.

The project is thought to be a step in that as well as using Microsoft's electronic mail facility it will also embrace speech synthesis and speech recognition technology in helping the disabled to communicate with the outside world.

Interviewers, researchers, managers: Mark Allen said he hopes that their involvement with the community will not be felt here. "I want to assure them a job has already and will grow there a rapidly," he said in the meantime.

Log on to the Flying Pig

LONDON subscriber Adrian Mier is using Macintosh to operate what he claims is the world's cheapest, completely independent professional computer consultancy service.

His seven-volume *My Secret* contains Flying Pig's reflections on his experiences that he believes just about everything is possible with the help of himself and

Flaring Pig will help both home and business customers choose their hardware, peripherals and software and also solve any technical problems.

For all 40 clinical centers, the MicroLink was of more or less the same size and configuration, depending on the size of the hospital and the number of beds.

The computerized form will be answered by Florida Pig County, which will promptly offer "an enhanced reply that would well serve both all slavery." The client is also entitled to 14 answers concerning laws over the phone.

Increasingly, the disabled people involved in the project are valued as the project is encouraging them to leave home.

At first we said, the national law that the world was independent for them and Africa, but they said no, it would remove the national structure from their lives and not so well as they.

But we have compensated and will arrange for them to travel under a regime where there is a more relaxed, combined with a more relaxed environment."

**YOUR chance
to join
MicroLink
— Page 67**

NEW SERIES

BASIC COMPILER

HAVE you ever wished your Atari ran faster? Perhaps you have written a program which redelays the character set or a vertical move routine for player missile graphics. Programs like these really show up the Atari's lack of speed when written in Basic.

An obvious solution is to write the routines in machine language using Atari Basic's USR function facility. One way to do this is to use an assembler program such as Atari's Assembler Editor cartridge.

This program performs a lot of the drab work associated with machine language programming but it means that the programmer not only is thoroughly familiar with the 6800 CPU at the heart of every II-for-Atari but also with the machine itself and with its operating system.

This is especially true where colour graphics and sound are concerned.

An alternative solution is to use a program called a compiler which is capable of taking a program written in Basic — or Pascal, C or whatever you — and directly producing either machine language or assembly language.

In the latter case the assembly language is assembled using an assembler program as discussed above to produce executable machine code. The trouble with compilers is that they tend to be expensive and they usually require a disc drive and more than 16k of memory (the lesser 480 and 800k versions run in the cold).

The program presented in this series is an exception to all the above: it is a compiler written in Basic which compiles into assembly language which can then be assembled to produce a ready-to-go USR function using the Atari Assembler Editor cartridge or an equivalent assembler.

All of this can be accomplished using just a 16k Atari with cassette drive — if you have more memory or a disc drive your life will be made simpler, but it is by no means essential.

Before you get too excited I should point out that this is not a professional software development system — you can't produce large programs with it.

It is primarily intended for fast

and dirty routines which can be captured in about a screen's worth of Basic. Also the limitations of producing the compiler in 16k lines mean that many Atari Basic features are not supported.

Floating point arithmetics and arrays, for example, may not be used — these are the main restrictions.

You also lose the comprehensive error checking offered by the Atari — there are few error checks when compiling and fewer still when running your USR function.

This limitation is easily overcome by testing your routine thoroughly using Atari Basic and only then when you are certain that it is correct compiling it to get the benefit of machine code speed.

Initially you will find that many things cannot be done using the compiler but you will also find things that cannot be done without the compiler.

Take sound, for example. The compiler provides an exact replica of the Atari SOUND statement but without range checking on the four sound parameters. Remembering that compiled programs execute many times faster than normal Basic it is possible to get new sounds from the Atari by varying the sound parameters much more quickly than is normally possible.

Other benefits of the compiler are advanced control structures such as nested procedures and REPEAT UNTIL and keywords to deal with timed interrupts. There are extremely powerful and open the door to concurrent programming — that is, two programs appearing to run at the same time.

Over the coming months I shall be presenting the compiler itself and also discussing the Basic which it compiles — its special features and limitations. I shall also be giving example programs which demonstrate the compiler's capabilities.

For now type in Program 1 — listing starts on Page 33 — and save it several times on a cassette or disc all by itself. This is the compiler program.

To use it you will need the compiler library, a set of assembly language routines which the eventual USR function will require.

■ I shall present the next month and also explain how to use the compiler.

Speed up your programs — even on a 16k Atari — with this Basic Compiler by FRANK O'DWYER

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1000

CHAPTER

項目	2014年	2015年	2016年	2017年
1. 营业收入	100.00	100.00	100.00	100.00
2. 营业成本	60.00	60.00	60.00	60.00
3. 营业利润	40.00	40.00	40.00	40.00
4. 利润总额	40.00	40.00	40.00	40.00
5. 净利润	30.00	30.00	30.00	30.00
6. 归属于母公司股东的净利润	30.00	30.00	30.00	30.00
7. 基本每股收益	0.30	0.30	0.30	0.30
8. 稀释每股收益	0.30	0.30	0.30	0.30
9. 加权平均净资产收益率	10.00%	10.00%	10.00%	10.00%
10. 总资产	100.00	100.00	100.00	100.00
11. 净资产	70.00	70.00	70.00	70.00
12. 流动资产	50.00	50.00	50.00	50.00
13. 非流动资产	50.00	50.00	50.00	50.00
14. 应收账款	20.00	20.00	20.00	20.00
15. 存货	10.00	10.00	10.00	10.00
16. 固定资产	30.00	30.00	30.00	30.00
17. 无形资产	5.00	5.00	5.00	5.00
18. 商誉	0.00	0.00	0.00	0.00
19. 长期股权投资	0.00	0.00	0.00	0.00
20. 其他非流动资产	0.00	0.00	0.00	0.00

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[illegible][illegible]

040000 1000

品名	规格	单位	数量	单价	金额	备注
1. 水泥	42.5	吨	100	150.00	15000.00	
2. 砂	中	立方米	500	30.00	15000.00	
3. 石子	20mm	立方米	300	40.00	12000.00	
4. 钢筋	Φ12	吨	20	2500.00	50000.00	
5. 木材	杉木	立方米	10	1000.00	10000.00	
6. 砖	标准砖	千块	100	100.00	10000.00	
7. 油漆	防锈漆	公斤	50	200.00	10000.00	
8. 人工	综合工	工日	1000	10.00	10000.00	
9. 机械	挖掘机	台班	10	1000.00	10000.00	
10. 材料	水泥砂浆	立方米	100	100.00	10000.00	
11. 材料	碎石	立方米	50	200.00	10000.00	
12. 材料	卵石	立方米	50	200.00	10000.00	
13. 材料	粗砂	立方米	50	200.00	10000.00	
14. 材料	中砂	立方米	50	200.00	10000.00	
15. 材料	细砂	立方米	50	200.00	10000.00	
16. 材料	天然砂	立方米	50	200.00	10000.00	
17. 材料	机制砂	立方米	50	200.00	10000.00	
18. 材料	河砂	立方米	50	200.00	10000.00	
19. 材料	海砂	立方米	50	200.00	10000.00	
20. 材料	湖砂	立方米	50	200.00	10000.00	
21. 材料	江砂	立方米	50	200.00	10000.00	
22. 材料	池砂	立方米	50	200.00	10000.00	
23. 材料	井砂	立方米	50	200.00	10000.00	
24. 材料	沟砂	立方米	50	200.00	10000.00	
25. 材料	路砂	立方米	50	200.00	10000.00	
26. 材料	田砂	立方米	50	200.00	10000.00	
27. 材料	园砂	立方米	50	200.00	10000.00	
28. 材料	方砂	立方米	50	200.00	10000.00	
29. 材料	长砂	立方米	50	200.00	10000.00	
30. 材料	宽砂	立方米	50	200.00	10000.00	
31. 材料	高砂	立方米	50	200.00	10000.00	
32. 材料	低砂	立方米	50	200.00	10000.00	
33. 材料	厚砂	立方米	50	200.00	10000.00	
34. 材料	薄砂	立方米	50	200.00	10000.00	
35. 材料	软砂	立方米	50	200.00	10000.00	
36. 材料	硬砂	立方米	50	200.00	10000.00	
37. 材料	松砂	立方米	50	200.00	10000.00	
38. 材料	紧砂	立方米	50	200.00	10000.00	
39. 材料	干砂	立方米	50	200.00	10000.00	
40. 材料	湿砂	立方米	50	200.00	10000.00	
41. 材料	饱和砂	立方米	50	200.00	10000.00	
42. 材料	非饱和砂	立方米	50	200.00	10000.00	
43. 材料	中砂	立方米	50	200.00	10000.00	
44. 材料	细砂	立方米	50	200.00	10000.00	
45. 材料	粗砂	立方米	50	200.00	10000.00	
46. 材料	天然砂	立方米	50	200.00	10000.00	
47. 材料	机制砂	立方米	50	200.00	10000.00	
48. 材料	河砂	立方米	50	200.00	10000.00	
49. 材料	海砂	立方米	50	200.00	10000.00	
50. 材料	湖砂	立方米	50	200.00	10000.00	
51. 材料	江砂	立方米	50	200.00	10000.00	
52. 材料	池砂	立方米	50	200.00	10000.00	
53. 材料	井砂	立方米	50	200.00	10000.00	
54. 材料	沟砂	立方米	50	200.00	10000.00	
55. 材料	路砂	立方米	50	200.00	10000.00	
56. 材料	田砂	立方米	50	200.00	10000.00	
57. 材料	园砂	立方米	50	200.00	10000.00	
58. 材料	方砂	立方米	50	200.00	10000.00	
59. 材料	长砂	立方米	50	200.00	10000.00	
60. 材料	宽砂	立方米	50	200.00	10000.00	
61. 材料	高砂	立方米	50	200.00	10000.00	
62. 材料	低砂	立方米	50	200.00	10000.00	
63. 材料	厚砂	立方米	50	200.00	10000.00	</

EVER since we introduced our check-sum program Get It Right, we've had requests to publish check-sums for the earlier games. It seems that some of you are still struggling to debug some of them.

So here, by public demand, are some check-ans for several of the early games. It seems that some people haven't quite grasped what to do with *Clot*. In flight I gather, so here is a straightforward guide.

- Type the program into the computer
- Save it to disk or tape using the

Disk users	LIST "D:\TEST"
Tape users	LIST "C:"

- Delete the program from memory for testing **NOT**

- How long Gen II Right into the machine taking note of the instructions compared in the Rfid in less than 500

- Data users should make sure the disc with the listed program is in the drive

- Tape users should rewind the tape to the beginning of the labeled sequence.

■ **Type** RUN and press Return. Get It Right? I will now look at each line of the listed property and put a corresponding check sum on the screen. Compare each number with the table given in the magazine.

For a short program, the whole table will fit on the screen. However, for a long program, you will have to use Ctrl-F occasionally to stop the table from scrolling off the screen and to reset it again.

t 'em all right

■ Where a number on the screen differs from a number in the magazine the difference is a difference between what you typed and what we printed. In the case of a REM line such a difference probably won't be important. In the case of a DATA statement a difference could be fatal. A full stop instead of a comma might cause the whole program to crash.

■ Use the Return To Basic option in Get it Right! and type NEW. Then reload the program as follows:

```

Decl users: ENTER'D:TEST"
Type users: ENTER'G"
  
```

Correct the offending lines and save the program again (see second step above). If you've made the corrections successfully, you should be able to RUN the program now.

However, if it still won't run you'll have to go back to step three.

It's also worth pointing out that although the message might say something like ERROR SIN LINE 30 this doesn't necessarily mean that there is a mistake in line 30 itself! This is just the line that was being executed when the error condition arose.

Typically the line referred to in the error message contains a REM statement. In these cases the typing error has probably been made somewhere in the DATA that is being read by the mentioned line.

Finally if you're new to Get it Right! and have arrived in from the December issue make sure you see the correction which we published in the January issue. To our readers — it takes a computer to really correct things up!



ARE YOU A POKER GAMBLER?

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K.E.C.M.

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ADAPTIVE
COMPUTING



SECRET//NOFORN REPORTS FROM OUR US SEARCH
FROM
FEDERAL BUREAU OF INVESTIGATION (FOIA//NOFORN)



中图分类号: G434 文献标识码: A 文章编号: 1004-041X(2006)03-0044-04

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Author	Year	Country	Sample Size	Response Rate
Chen et al.	2005	China	1,000	85%
Chen et al.	2006	China	1,000	85%
Chen et al.	2007	China	1,000	85%
Chen et al.	2008	China	1,000	85%
Chen et al.	2009	China	1,000	85%
Chen et al.	2010	China	1,000	85%
Chen et al.	2011	China	1,000	85%
Chen et al.	2012	China	1,000	85%
Chen et al.	2013	China	1,000	85%
Chen et al.	2014	China	1,000	85%
Chen et al.	2015	China	1,000	85%
Chen et al.	2016	China	1,000	85%
Chen et al.	2017	China	1,000	85%
Chen et al.	2018	China	1,000	85%
Chen et al.	2019	China	1,000	85%
Chen et al.	2020	China	1,000	85%
Chen et al.	2021	China	1,000	85%
Chen et al.	2022	China	1,000	85%
Chen et al.	2023	China	1,000	85%
Chen et al.	2024	China	1,000	85%
Chen et al.	2025	China	1,000	85%

FIGURE 1 | The effect of the COVID-19 pandemic on the global economy.

MICRO-FIPRESS

Abstract

- Hardware
- Licensing of Software
- Peripherals and Accessories / Data Cassettes
- New product releases / updates
- Exclusive Club Membership
- Special offers for club members
- Advice / Help Service
- Loans / Carrels - made to order service
- Search/Locate / Order Service for special requirements

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(Please send no letters for editorial consideration)

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[illegible]

Abstract

Goonies saved by the play

HOT having seen the movie of the same name, I don't see what's so hot. **The Goonies** seems an unnecessary tie-in to another knowledge of the film makes the game any more enjoyable or easier to solve.

I say solve for what we have here is not another of those running-jumping-climbing platforms and ladders made games where the basic idea is to guide your way through several different screens.

Not again. I hear you say. And so, but at least **The Goonies** has one novel interesting feature which prevents it from being written off as yet another in what has now become a long line of played-out game scenarios.

In order to enter each scene you need to get the two or three characters (Goonies) to work as a team. Goonies are children, by the

way.

Only one Goonie can be operated at a time — you simply switch control to the other by pressing the joystick fire button.

Unfortunately this unusual and interesting game play concept is almost wasted here because the other elements — the game — contains graphics, animation, colour and sound — are nothing to get excited about.

The Goonies' goal is to reach One-Eyed Willy's pirate ship and grab the treasure. To do this the Goonies have to progress through eight scenes of underground chambers in each of which puzzles have to be created and the exit found before they can progress to the next chamber.

Each scene has to be separately loaded in from cassette or disc when you reach it and you can only exit



start at the first scene.

Once you've lost all of your lives you must reload Screen 1. In again a real pain if you're using a cassette tape drive this also means reloading the tape to the correct point on.

Various hazards along the way for the Goonies include members of the dreaded Fester's gang, lava pits, holes, steam, bats, barbed-wire fences, flying skulls, slime and a giant octopus. The Goonies move around by running and jumping, climbing and hanging, the latter on horizontal bars.

Although the teamwork concept is a good one, the game is really let down by rather bland and uninspiring graphics while the use of sound and colour is both limited and wasteful.

Included in a hint sheet where cheating cheats are about help you in solving each of the screens.

The game is worth playing if only to try out this team character feature, but don't expect anything worth making from it or you'll be disappointed.

Bob Chappell

Forget the cover, enjoy the story

DON'T judge a book by its cover. That's the idea with **Zone X** from Goonies Inc. and one of their first titles available.

I was a little apprehensive about the quality of the game, but I soon changed my mind when it had loaded.

The object is to collect plutonium that has been left scattered around in a minefield. Why at an NES release?

Well according to the story and manual has produced so much plutonium that all the government storage tanks are full so minefields have been used to store nuclear waste.

One of the shafts had been infested by destructive subterranean who attempted to seize the plutonium. The whole operation went wrong and plutonium was scattered all over the mine.

The player's job is to collect

all the plutonium and dispose of it via computers.

Easy? No way. There are robot guards which walk around in every biological direction and laser doors open and close when they work making your job more difficult.

When you find a place of plutonium you have to pick it up and then take it to a computer. Since this stuff is radioactive the longer you hold it the weaker your resistance can become.

You can replenish the suit's resistance by picking up some bones which lie around the mine.

If you wish to go through a green door you will need a key. Keys are cheap and can be created with relative ease.

Another helpful object is a mat which can be used to block off robots. Its drawback when using these because if

you place the mat by the wrong side of your man you will end up stuck in a room with a bunch of robots made and more than able to kill you.

Once you have safely disposed of all of the plutonium you must leave via the exit door which you must first locate.

Bonus points are gained by picking up gas-can marks but they away from any that are in unmarked positions — they don't worth the bother.

Most players will find **Zone X** hard enough to start with. It will teach you how to avoid robots and time all your moves.

Each zone is different and since the screen scrolls in all directions they take a long time to master.

The game allows selection of Zones 1-4, 7 and 10. Each then has a difficult level 1, 2 or 3. This gives a possible 30

zones.

Other variables which determine what you will do include doors which close behind you and never open again and air locks which may release robots enclosed in an adjacent room.

There are warp doors, invisibility masks and shields in the game, but I failed to find these.

When you are killed either by being run over by a robot or running out of time, your man will explode and his remains fly off the screen.

The game has a high score table but I hardly ever scored enough to get on it.

In all a nice offering that should keep the best of gamers occupied for many weeks. **Zone X** is available on disk cassette or disc and retails at £9.95 and £12.95 respectively.

Richard Vernon

FUNSTY have simple ideas can quickly turn into big money spinners. Take computer games, for instance. Walk into any record store and you sure as my name is not a 16-Tell you released in that at least half a dozen complete albums of past months hits.

Once upon a time you could buy a set of classic board games in a box. Nowadays those old compendiums of Ludo, Snakes and Ladders, Draughts and Nine Men's Morris have been supplanted by a technologically more advanced phenomenon — the computer games compendium.

These collections of previously released games have proved to be very popular and it's not hard to see why. A compendium of quality games offers outstanding value for money.

Chop Suey tops bargain collection

English Software, publishers of the amazing *Flintstones* (reviewed in a recent issue and in my book *The Best Atari 1000 game*) are no slouches when it comes to giving the Atari games playing public what they want.

They have just released a further volume in their *Smash Hits* series, *Smash Hits Volume 4* contains the superb *Chop Suey*, *Snake*, *Cannon Hawk* and one I have not seen before, *Freefall*.

Chop Suey is a top notch Kang Powertech where you go your martial arts skills against a human or computer-controlled opponent.

Impressively smooth animation and a variety of realistic moves result in a smashing game. Best to look out for this in English Software's best to date.

Kushin, *Cannon Hawk* has you racing and leaping through a succession of obstacle-strewn streets in a gallant attempt to reach a damsel in distress. Descriptions, fraps, *Samurai* and there are just a few of the highlights.

In *Nijack* you pilot a chopper and must rescue 10 wife from a moving train. To accomplish a rescue you have to position the chopper over a VIF (wife) has thoughtfully

pointed on to the top of the speeding train and lower a rope for him to grab.

How does discount him on top of the rear carriage where he will be secure. There are comments also to the difficulty.

Freefall tests you spinning left to right along a four lane highway dodging traffic — you can even coast over it — until you reach an office.

Inside you steer the maze for a split of the whole dodging and clashing *flatties* before returning to the streets and on to the next office. These skill tests are an offer. This one is a tough but addictive.

Of the four *Chop Suey* is easily the best and the compendium's worth buying for that alone. But with three other decent games thrown in for good measure, you really can't go wrong.

Rob Chappell

The Zombies return to life

ELECTRONIC Arts has showed been a good source of original and exciting software but I was, rightly disappointed in *Realm of Impossibility*.

Originally released under the name *Zombies*, the program has now been revamped and launched in the UK by Avalonsoft.

The game follows a good against evil theme. The player acts in an intense Japan type role, fighting all forms of nasty beings from man-eating cent bees to small round arks which look like gobstones.

The action starts when an evil alien called Wazir steals the seven crystals of the middle kingdoms and you have to recover them.

The Wazir has a chapel. He has hidden the crystals among his 13 dungeon strongholds — but he made one small mistake. He only locked six of the dungeons. The other seven contain either keys that open the remaining locked dungeons or weapons for you to collect.

A menu shows dungeons that are locked, completed or unlocked. When you select a dungeon, the screen changes



to a 3D view of the dungeon, giving a clear perspective of some component of the famous *Zoozoo*. Your mouse stands ready to explore the passages ahead.

You will probably have wondered why this game is titled *Realm of Impossibility*. Well some of the dungeons have walls that would confuse any ball by.

In the *Realm of Impossibility* dungeons, for example, there is a 3D platform that seems to be 100 metres high

and yet you can step down to ground level at the side of the platform.

As you move out of a room the screen scrolls the next section smoothly on and when this is complete a whole host of creatures converge towards you.

At this point you should have acquired the *roam* and *lunge* (both for the first time) or be running towards any object you wish to pick up.

The graphics usually wonder about or just head

straight for you. When a nasty collides with you your hit points decrease. If your hit points drop below zero the game ends.

The best guys include some nice odorous *zombies*, giant spiders and evil bats. These subordinates of the evil master play a defending role, pointing long the ways and crowns against intruders. They're not stupid, so be careful when being chased.

The problem with this game lies in the area with which I completed all the dungeons. I finished the whole game on only my third go.

The game offers a two player game which is quite fun. Both sit on the screen at the same time so this calls for complete cooperation between them. If a player wishes to leave a room he must tell his partner to leave himself. If a player is killed the remaining player can resurrect his dead companion by touching him.

The price for this UK Top 5 hit is worth a pretty good 100% by £19.95 for *Electronic* and £12.95 for *Amiga*.

Richard Warner

MicroLink

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The modern equivalent of the telegram is the telexmessage. Send it before 10pm and delivery is guaranteed by the post the following day (except Sunday). The service was intended for people placing their message to the operator - which costs £3.50 for 50 words. But you can now use it via MicroLink, for only £1.25 for up to 250 words. For an extra 50p your message can be delivered in an attractive greeting card.

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fixing these values.

On the 800800 locations 0004 and 0005 are used to define the destination of pages 3 and 3.

Maybe I should buy an old 800 to check that one future programs that I write are compatible.

Stephen Williamson

Good reading

LET me congratulate you on a short note magazine for all Atari users. Inquiries and expert advice that I especially find Alan Ayres a gem on the Atari's display list.

I agree with Dave's final

suggestion that you should include some assembly language and complex graphics routines for the more experienced Atari programmers to get to grips with.

I would be very grateful if you could help me with the following:

Could you tell me if there is a book available for the 80081 which has a comprehensive listing of the Atari ROM and describes what each routine does and how to use it after the book *The Complete System ROM Disassembly by Melbourne House for the Spectrum*?

Could you also tell me if there is a book which lists and describes the uses of the different special memory

locations and registers that the Atari uses?

I have read Mike Ayres's series and sometimes where I've got the information about the hardware register locations and the WSYNC location.

I hope you can answer my questions as I would like to make full use of the Atari's superb capabilities which make other consoles feel dated. **Alan Blackwell, Carlisle.**

There is no book that gives a complete ROM disassembly for the 80081, but let us recommend a few very good books for your perusal.

Firstly *The Technical Reference Notes* (Atari) provides a full listing of the OS on the 400/800 machines which gives you a very good

idea of how everything works on the 81, too, plus you get the Operating System Users Guide—a valuable book to the machine code programmer.

The *Atari Basic Source Book* (Computer Basic) gives a disassembly and explanation notes of the Per-A Basic cartridge which has a few bytes in the same as the 81/81.

OS 8.00 is a complete two books. *Atari OS* (Computer Basic) which covers the OS (OS 8.00) and the OS. *Utilities Listing* (Atari) which provides a full listing of OS 8.00 (the utilities/man segment).

As a good complement to the above books, there is a

FINAL WORD ON THOSE OS BUGS

HAVING bought an 80081, for Christmas 1984 I am now on my third one. The first failed up while doing a program and was replaced.

The second had the same fault and we think are affected only two weeks ago after the same.

My attention has been drawn to a letter in *Atariage* issue 32 which states that 80081, and 80082, computers are being supplied with faulty chips and gives a simple test. Type in

PRINT POKE 408204

If the result is 98 you have the defective Basic; but if you get 194 you have the updated. William C. Brady which is all right.

This matter was explained to my retailer, but it appears that of his 81 models given the name, nothing was ever done. All have defective Basic.

According to the letter writer Alan no longer have any New C. Brady units left and says it is the responsibility of a production line.

If this is the case and Alan is deliberately marketing faulty machines, speedy action is necessary to remedy the situation otherwise Atari will not last long.

Don't get me wrong—I am

enthusiastic about Atari having that the present console 400 computer 800 computer and now an 80081 which has earned them of being by looking up regularly.

If the Atari's letter is correct the same Alan will soon arrive, the letter.

Have any other 80081 users found this fault?—**G. J. Davidson, Newcastle.**

LET me congratulate you on your magazine for the Atari user. It will be a real life saver and more of long waiting.

The main reason for this letter is basically to help your reader. I. Williams writing in the October issue.

I bought my Atari 400 early in 1982 and found that the owner manual and the Basic manual supplied only located the author of the capabilities of the machine.

I found I was getting faulty, like T. Williams, which was not mentioned in either manual.

When writing a program, including anything more the keyboard would occasionally freeze, making it necessary to switch off and wait up again. Losing where ever was in memory.

A phone call to the Atari

Hotline gave me the solution. Apparently with such much wrong and on 1987 corrected the error buffer file up and correct the keyboard to look up.

The solution is to add a date and then give the 1987 corrected. I now have the date of listing or adding me more than two lines at a time and then giving the 1987 corrected.

As to those concerning Don I do not get faulting any more—**G. A. Edwards, Bristol, Newnes.**

I OWN an Atari 80081 which I bought over a year ago. I don't use your issue of Atari User. I had not been getting very far with understanding my machine, but I am now an old reader of your *Beginners and Graphics* sections which have taught me quite a lot.

I would like to know if you can help me with a problem that I have with my 80081.

When I type in programs or sometimes single editing.

I just control of the cursor and the only way I can regain control is to use the Atari's button.

This is the worst of the time, but sometimes this will clear all of the program that I have

typed in and I have to start all over again.

Will you please tell me if this is normal or if there is something wrong with my machine?—**P. Turner, Tisbury.**

Let's clear up this problem of bugs in the OS and Basic once and for all.

Like all companies, there are minor bugs in Atari's machines. We can be thankful that they are not as serious as, say, some of the early Sanyos or Atari machines, but they are nonetheless real there.

Don't get me rushing back to the shops and ask for your money back because the bugs can mostly be worked around.

The two most major ones concern the EXPAND and CONTRACT routines within Basic itself.

On the old 400400 Basic cartridge (Rev A) one of the routines to move memory quickly downwards (DOWNTRAV) had a fault which meant that the machine would crash and lock up whenever it was asked to move a multiple of 256 bytes.

This very rarely happens of course, but it made much worse by a lot of editing, especially involving deleting lots of lines.

There is no date for it

super-memory map produced by Computer Books called Mapping the Atari.

It contains locations written for the OS-based DOS and all of the other stored bytes for graphics sound I/O and so on.

Make sure you get the newest edition if you have an 800XL, as it also corrects locations on the XL and XL computers and DOS 2.5.

One other book that wouldn't go amiss is *The Atari Atari* which is a slightly but helpful guide to the workings of the machine and its OS.

This is not a substitute for the *Technical Reference Manual* but is much more helpful to the less advanced machine code programmer.

Common variables

QUICK you tell me please if there is a way in which one disk program can load and run another disk without losing the variables and their values set up in the first program?

A I appreciate that this case covers BASIC. It doesn't work there either a program but it seems possible in zero.

Creating a whole file on disk and then loading it from the current program would work but it would be slow and the same programming would be tedious and defeat the object which is to make new programs and keep them to a

manageable size.

On the subject of long programs, is there any way of bypassing the maximum line number, 9999 that can be used in list ranges of lines?

As far as I am aware to fix a range starting at over 10000 and how to fix the whole program - A.G. Barber, *Burwash*.

A There is no easy way to use common variables with Atari Basic, but how about writing up a file which contains your new programs in LISTed format plus lines containing just a line number to define anything that remains at the old program?

By using RETURN key mode you could then get the new program to RUN correctly.

after you had ENTERed it. You may find that this is a more than willing up a variable file on disk.

The other question has no easy answer. I'm afraid you'll just have to put up with typing that extra comma 9999 after your LIST commands.

Strip Poker on disc

I HAVE just received notice on *Strip Poker* on your excellent *Discworld* edition but although it was a good review your editor Pat Cusackman wasn't too clear about the drive

except to make sure you SAVE your programs regularly.

You'll know it happens though because the keyboard will accept nothing you type unless you press the **ENTER** key. You can't even save it then it will not up again.

When Rev B Basic was written for the XL the fault - 2 bytes would you believe - was corrected.

Unfortunately some bright spark at Atari decided that had better do the same to the older machine EXPAND (which was perfectly OK as it was) hence the same can now happen when you add lines on XL, so some people get stuck when entering programs.

The problem with EXPAND can also cause failure during the GIM command giving you an error B where there should not be one.

Rev A Basic had a few other faults which also gave odd results as does INPUT without variables, LOCATE and GET now occasionally get their data mixed up under very rare circumstances, and the INOUT command is a bit quirky.

Rev B fixed all these other problems of course, but introduced one other rather major one.

As the system would come down again on the last few

bytes of memory before the display appears at Atari thought. As I said a little while later to Basic to tell the program that it can't use the last 16 bytes of memory.

Good idea but he did it by adding 16 to the end of program counter so that it would register as being out of memory 16 bytes too early.

This effect is cumulative which means that every time you SAVE a program 16 bytes before are added to it.

On a 128k machine this quickly mounts up so all sorts you think. Ah - so let's just LIST the program and re-enter it means as often to clear up the table.

But then the EXPAND routine is used to the full of course, to add lines and you can well crash the machine. The only thing to do is SAVE it first then LIST it.

If ENTER crashes the machine reload the normal version and try adding a few bytes to some of the lines (such as a REM or two) then LIST it.

Many other bugs have been pronounced but I can assure that none will work - the most likely probably being to enter garble over the keyboard.

All of these bugs have been fixed in Rev C, which is in the

XL machines, and also available on cartridge for older computers.

The OS is not without its problems too. The old 4006000 OS could time out every so often during disc or printer I/O.

It would come back about 30 seconds later but would have spent a minute by then.

This was caused by a routine accidentally left in the machine code which allowed for older printers to read down during a long print run.

Also the cassette routines didn't clear their buffers correctly so CSAVE could sometimes leave garbage at the start of a file causing it not to load back again.

The cure for this one is simple. If you have a 400 or 600 always type LPRINT before trying to CSAVE a program (ignoring the 128 error).

This will ensure that the buffer is clear before you start.

A number of other things could cause minor problems but only at a machine code level so I won't cover them here.

On the XL the OS was revised to clear basic problems and is by and large bug free. However the hardware isn't.

There's also the early 800XL,

and 800XL machines a timing problem with the 8000 chip.

It normally works fine but after a bit of use it develops up one particular point of the last bit back of time and could communicate with a corner chip in the machine.

The cure for this is a replacement 8000 chip but only use an Atari supplied version or you'll run into further problems.

You can find out if you have the fault (known as the math pack test) by running the following program:

```
10 DEFDBL A-Z
20 PRINT 444-CPAVE
30 GOTO 10
```

Leave the computer overnight and if it fails, probably with a yellow screen and garbage on the bottom line of the screen you have the faulty chip and you should take your machine to repair.

Only the math pack problem will cause this program to fail while running.

Perhaps this will clear up just what the bugs are and what they mean. As I have said though, they are generally minor and can usually be avoided by the common practice of making regular back-ups of programs.

André Willey

version.

Helping you also worked I thought I'd better point out a couple of things.

For one thing it only requires 48K, not 64K as has been stated.

I had trouble finding it until I decided not to press OPTION on boot up. Anyway most thanks for the nice version!

I hope this helps people having trouble with this most fun game. — Mark Daley, Newton Abbot.

■ I think that it is probably the best qualified person in the UK, to answer this one, as I did the cassette version for LSI Logic.

The disc version is basically the same as the standard version (disk) and it requires 48K.

As I didn't add anything apart from some protection routines to the disc, you must have basic resident to play the game — that is, don't hold down OPTION on an XL02.

As I did a lot of reworking for the cassette version and looked at the games under which the operating system and Basic you must have a 64K machine to run it.

In fact I only had about 82 bytes to spare under there, so it's a tight squeeze.

The cassette also requires basic, but if you accidentally do press the OPTION key and disable it, the new routines inside routine 110 will still just turn it back on again itself, ah!

Send your feedback and will work to make the computer check a self-checking work then don't hold the OPTION key down.

Pat only had the cassette to go by and so couldn't know the changes for disc.

André Willey

Disc doublers

I AM shortly to buy a disc drier for my 80085.

For a number of years you have been advertising a disc doubler which is designed to halve your costs.

I'm in two minds about buying one as according to my theory, modifying a disc is the

ATARI USER Mailbag

WE welcome letters from readers — about your experiences using the Atari disks about jobs you would like to put on to other users — and about what you would like to see in future issues.

The address to write to is:

**Mailbag Editor
Atari User
Burger House
68 Chester Road
Hazel Green
Stokeport SK7 5NT**

any attempt can be made to the drive and corrupt the disc.

They say that the release paper which goes into discs is ground in such a way that during it latencies will tend to scratch the magnetic particles from the surface, is that over? — **Barbara J. Haxworthy, Barnetley**

■ Springs is divided as whether disc doublers are a good or bad thing.

Disc manufacturers obviously don't like them and have probably been responsible for several severe stories.

Replied against this, the fact that many people use them without problems.

The Atari User editorial team contains proponents of both positions so you'll have to make up your own mind.

User groups

A NEW user group has just been formed in Swindon meeting twice monthly.

If anyone is interested then please telephone Colin on 02984 888478. — **Paul Taylor**

AMF I appeal through your columns for help in any way in contact me with either in writing up a Fantasy and District Atari User Group — **Brian Giddett, 18 Bridge Walk, Parsloes, Garsborough, Harvey GU11 7DL**.

I HAVE bought, do you have, a tape and the is the Caroll area? If so and you are interested in joining or buying

an Atari User Group please contact me at the address below.

You may even find a computer being put to rest that you had not thought of. Look forward to hearing from all you Atari enthusiasts and there is the ability of the Caroll area. — **Raymond Price, Manselville House, 5 Leeds Street, Canton, Cardiff**

Newspaper accounts

I HAVE an 80085, also drive 10MB and will accept the printing a poster.

I am a newspaper and I was wondering if there is a program for the Atari that will help with my newspaper accounts.

There are over 700 accounts and the program must be able to access each one, change the amounts sent to stop and then read the changed amounts on a later date.

It should also be able to calculate bills except by the printer. — **Neil Threlkirk, Plymouth**

■ You could use an accounts package but this seems rather like overkill in this case.

Have you thought about putting the information onto a database which has a built in calculator feature such as dBase II?

It's worth thinking about and may end up saving you a lot of time and trouble in the long run.

Simple bills of some

amounts, date and increasing amount could be printed and anything more complex could be linked into mail merge on a good word processor. Super word package.

Auto-boot tapes

COULD you please tell me if there is any way of loading an ordinary Basic program onto a boot tape, and could you explain fully how it works.

I would like to know what I'm doing rather than just trying to do a thing. — **J. Walker, Aston Vale**

■ The easiest way to produce a boot tape is to save the program using SAVE C. You can then load and run the program with the single RUN C.

We hope to publish other ways of producing auto-boot tapes and discs in a future issue. Meanwhile to use will give full explanations.

Expanding the 600 XL

AMF I expand the memory of my own 60001 with modules of 64K up to 128K that are on offer in your magazine?

After doing so, would I need to buy games that have been specially made for expanded systems — or do I need to know it and start again? — **M. L. Lippert, Barnford**

■ With the present high cost of expansion modules you'd be better off starting again with either a larger 80085, if you can find one or a 100085.

Piracy pointers

I READ with interest your report on John Jackson's campaign to stop piracy by copyright. I (Computer Run) and I have two observations to make.

I bought Computer Run on a 600 system (600 hard) and modification system and had them reset it.

It seems that the authors

in some important graphics programs that not want any more and Computer Support refused to change their contract if I took out the ads myself.

If you are worried about such things (that is the nature being bawled?) they would make the change for £25, buying the total package to £700.

Especially important when hardware is incompatible with Macintosh is direct which they tried to mention.

Prices are a mixed phenomenon. At present, changes independently prices, either up or down.

Computer Support should get their house in order and change prices at which printing becomes unreasonable. — **Goran Winkler, Oxford.**

Looking for a printer

ACTUALLY the Atari 1040 seems to have been moving very fast and I am wondering if you could answer the following question.

Am I close to release from Street View, Bally's Super Fun and Revolution etc in the Atari? If so, when?

I found that Bally's were to cancel some of their games for the Atari some time ago. Is this true?

Do you know if any of the other games on Bally's software license are planning any releases for Atari?

Having read through the story from the Atari by the Street View, I was looking for a book which would not only go into depth about the Atari's software license but would also explain them clearly.

Your Atari Computer looked good but £17.50 is a bit of money to spend if I only get one what I already have.

Can you advise me on what to continue and possibly recommend another book? — **Gina Horvath, Penelope.**

■ The answer to your first two questions is — possible but unlikely in the near future. The best way to find out is to contact the companies con-

cerned.

McIntosh House, Aring, Grimsby Graphics World Developmental, Tyneville, MuralPro/Provision and many others are all planning releases on the Atari 1040.

Your Atari Computer is a very good book and covers as much ground as it can without going into machine code.

It is a little expensive but we think it's worth every penny. Ask any serious Atari user about The Atari Bible and you'll see what we mean.

New releases

I did happen shortly to buy a printer for my 600XL, so I will require an RF232 or a Commodore parallel interface.

This is where I need your advice as to an inexpensive but reliable one.

I purchased various hardware articles and found the range to be between £25 and £30, a price that suits my pocket.

A number of telescoping interfaces fall into this range, but I was told by one dealer that they would not touch or guarantee them. — **Lee Charlton, Macclesfield.**

■ The best answer is to look through the ads in the magazine. Any interface sold by a reputable company will have a 12 month guarantee and after that you can always go direct to the manufacturer if the dealer can't help you.

However, most interfaces being sold state will work trouble-free for ever more.

If your retailer says to you it's a particular interface find out why and let us know.

Reluctant camels

I HAVE a 600XL and a 1010 Data Recorder with which I cannot find a disk of the MuralPro Camels.

It is a machine code game so you have to put the computer in machine code mode when it is switched on, but after about 20 seconds it goes into the self test. It will not find these either although

you can hear them going into the tape and if you play the tape back you hear the data.

Incidentally do you know why the recorder has a memo here and the data is recorded on one channel? Is baffled me. — **Phil Gandy.**

■ The problem is almost certainly with the recorder. Try taking it into a tape shop and see if they'll let you try it out with one of their Macintosh 1010 or 1015. Take your computer back for repair.

Otherwise send it back to the place you got it from, asking for a new one. The memo system is to allow the store stock to be used for a soundtrack while loading.

BBS on test

FOUR readers may be interested to learn of a new BBS which will be on Nottingham 0532 274269. About 22.00 to 23.00 daily. Swap Atari 1040s, spend 1000 cash, download special software on floppy. — **H. Jarvis, Nottingham.**

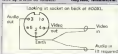
Video connection

COULD you tell me how to transfer graphics produced by the 600XL on to video tape? — **Steve Haptonstall, London SE8.**

■ The 600XL, as with all Atari computers except the 800, has a video out socket at the back. — **Michael Rowley.**

This 8-pin DIN can be connected to the video in socket on the video recorder and the video select switch changed from Turn to Auto or sometimes Camera.

This will give a far better result than simply plugging the TV lead into the video socket on the video. Either use a standard monitor cable, or wire up a test as follows.



Location 54017

I OWN a 1300E bought after my first computer the 600 with tape.

I thought I'd better learn that it's a tape loop when I something from the family planning office!

My father had a 600 but then back of Atari's for the months with a keyboard fault, but that's another story.

My question is this: The 1300E handbook states that normally memory location 54017 contains a 'HALT'. If I press 54017 I get 252 and when the display 130 in the shop. Can you clarify this for me? — **A.M. Barry, North Wales.**

■ Location 54017 on the 1300E should normally contain 252 with Atari turned on, not 130. See my article in the June 1985 issue for a full description of how it works and what each number means.

Article's Willey

Fun and Games

WILL you be so kind to send a further comment to CMP B&N by a person like Jonathan Garry?

You were quite happy with it and so came to the amazingly accurate gold value and bronze medals that met in the current order.

The prices in that place got a bronze medal and the person in second place received a gold medal.

For some unknown reason when we ran the 100 games our time was 10.58 for which we received a silver medal but a recorded time 20.

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Canada follows 2006 survey of scientists

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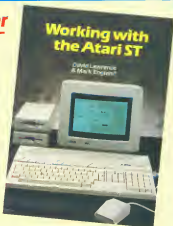
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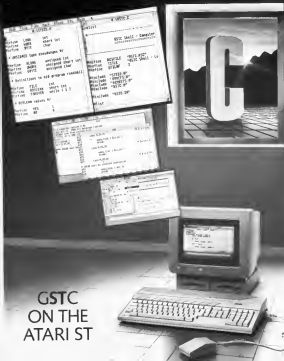
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